

New records of *Pseudoscaeva meridionalis* (Fluke, 1951), *Eristalinus (Eristalodes) taeniops* (Wiedemann 1818), and *Toxomerus politus* (Say, 1823) (Diptera, Syrphidae) to Chile, with updated distributions for the New World according to citizen science

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Abstract. Introduced syrphids are increasing their distribution in the New World, and Chile is one of the most impacted countries. Here, we report new localities in Chile for *Eristalinus (Eristalodes) taeniops* (Wiedemann, 1818), *Toxomerus politus* (Say, 1823), and *Pseudoscaeva meridionalis* (Fluke, 1951) and provide updated distributions and new records of these species in other New World countries. We discuss the potential negative impacts of these exotic syrphids on native species in Chile and highlight the power of opportunistic recording in detecting exotic species.

Key words. Facebook, flower fly, hoverfly, iNaturalist, invasive species, opportunistic records

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INTRODUCTION

Flower flies (Diptera, Syrphidae) are one of the most essential fly families for pollination living on Earth. With approximately 6,016 species grouped in 299 genera distributed worldwide (Evenhuis and Pape 2024), flower flies serve as the main pollinators and pest control for many crops and natural ecosystems, ensuring key ecosystem services for nature and humans (e.g., Dunn et al. 2020; Pekas et al. 2020; Davis et al. 2023). Flower flies also have a great dispersal capability; they are one of the few insect groups with long-range migration of up to 4 billion syrphids annually, transporting billions of pollen grains and consuming up to 6 trillion aphids (Wotton et al. 2019). This evidence has promoted the study of the ecology of native syrphids worldwide; however, we still know little about the flower flies that have been accidentally introduced into various countries.

Describing and monitoring introduced pollinator species is key to understanding their potential to become invasive species and their corresponding negative effect on native ecosystems. As in other pollinator taxa, exotic flies have been recorded to dominate pollination in agricultural landscapes (Stavert et al. 2018). However, while exotic pollinators may become dominant and have a visitation frequency of 80% higher than native pollinators, their efficiency can be 55% lower when visiting native and crop species (Aizen et al. 2020; Debnam et al. 2021). This decrease in efficiency may be due to exotic pollinators being responsible for the displacement of native pollinators by competition and disease transfer (Dohzono and Yokoyama 2010; Aizen et al. 2020; Debnam et al. 2021) while being unable to replace the functional composition of native species (Stavert et al. 2018). Therefore, monitoring exotic pollinators and their distribution is key for developing early strategies for managing them and mitigating their impacts on native ecosystems.

Several flower-fly species have been introduced from the Old World mainly to the Nearctic and the Neotropics. *Eristalis tenax* (Linnaeus, 1758) is the most emblematic example. This synanthropic species was introduced to the Nearctic in 1875 (Gilbert 1986) and it is now widespread in North America (Skevington et



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al. 2019), the Caribbean, Mesoamerica, and South America (Thompson 1981, 1997; Barahona-Segovia et al. 2021; Maza et al. 2023). In addition, Gibson (1917) reported the presence of *Eumerus strigatus* (Fallén, 1817) in Canada and some states of the USA for the first time. Later, many other species of Eumerini were introduced to North America (Skevington et al. 2019) and Chile (Gerding et al. 1999). More recently, *E. strigatus* and *E. obliquus* (Fabricius, 1805) were reported for the first time in several provinces of Argentina (Torretta et al. 2021b, 2023), while *E. obliquus* and *E. aurifrons* (Wiedemann, 1824) were reported for the first time in Hawaii, Brazil, and Paraguay (Garcete-Barrett et al. 2020). *Syritta pipiens* (Linnaeus, 1758) was established in North America since about 1895 (Skevington et al. 2019), and Thompson et al. (1990) reported the presence of *Syritta flaviventris* Macquart, 1842 in Texas, USA in 1988. Thompson et al. (1990) also reported the presence of *Eristalinus taeniops* (Wiedemann, 1818) for the first time in the New World; the species has since been recorded in several Latin American countries, such as Argentina (Rossi Rotondi et al. 2020; Torretta et al. 2021a; Maza et al. 2023), Brazil (Morales and Köhler 2006), Chile (Thompson 1999; Barahona-Segovia et al. 2021; Olivares et al. 2021), Colombia (Ángel Villarreal et al. 2021), and Paraguay (Goosen-Lebrón et al. 2023). In contrast, few species of flower fly have been introduced from the New World to other parts of the planet. For example, the syrphids *Ornidia obesa* (Fabricius, 1775) and *Toxomerus floralis* (Fabricius, 1798) have been the only species introduced accidentally from the Neotropics to Tropical Western Forests of Togo, Benin, Nigeria, and Cameroon (Thompson 1991; Jordaens et al. 2015).

In recent years, thanks to a 10-year citizen-science program devoted to flies (see Methods), we observed that the exotic Band-eyed Drone Fly, *E. taeniops*, had a wider distribution than we had known from the localities reported to central Chile (Barahona-Segovia et al. 2021). Moreover, thanks to biodiversity platforms like iNaturalist, *E. taeniops* has been recorded in other countries where the species is not officially reported. Furthermore, reports in our citizen-science platforms from 2022 also show that *Toxomerus politus* (Say, 1823), originally reported from all countries from the New World and only recorded from Arica and Parinacota Region in Chile (Barahona-Segovia et al. 2021), expanded its distribution to southern Chile. Therefore, new exotic flower-fly species could occur in Chile due to the high flow of imported agricultural products from other countries of the Neotropical realm. The aims of this note are (1) to document the first record of *Pseudoscaeva meridionalis* (Fluke, 1951) to Chile and Uruguay, (2) to document the first records of *E. taeniops* for Costa Rica, Ecuador, Mexico, Peru, Bolivia, and Uruguay and to expand its distribution in Chile, (3) and finally, to expand the distribution of *T. politus* in central-southern Chile. We presented an updated distribution in the New World based on citizen-science records for all species.

METHODS

We collected flower fly records from our target species between 2015 and 2024 thanks to the Moscas Florícolas de Chile citizen-science program and their social media accounts on Facebook using the group tool (Barahona-Segovia 2024a) and iNaturalist (Barahona-Segovia 2024b). For *E. taeniops*, we filtered records using the search engine in the main platform of our project. We searched by year and administrative Chilean region using the “genus AND region” (e.g., *Eristalinus* AND Valparaíso) or using the “specific name AND region” (e.g., *taeniops* AND Valparaíso) to avoid temporal or spatial missing records. For iNaturalist, we filtered by country (e.g., Chile) and extracted all records available per species. To standardize both datasets, we include basic information for the validation: (1) original photo available, (2) specific locality for georeferentiation or coordinates to map the records, (3) date of observed record, and (4) legacy of the record using the real name or a nickname. All records were curated individually one by one to avoid misidentifications, obtaining the best basic information for the new records by country. For Chilean records, more information about biological interactions observed (i.e., plant species visited), and a permanent link to the original record were added. Furthermore, individuals of *E. taeniops* were caught by hand and added from extreme Chilean Regions (i.e., Arica and Parinacota and Tarapacá) and central regions of Chile (mainly from the Metropolitan Region). These individuals were collected with a hand net from focal observations of flowers for 10 minutes, and then, stored in ethanol 90%. We repeated the process with *P. meridionalis* and *T. politus* records obtained from both social media platforms.

The distribution maps of the New World (including Chile) were built with flower-fly records from our citizen-science platforms as well as from museums and private collections as follows: private collection of Rodrigo Barahona-Segovia (PCRBS), Insect collection of the Universidad de Tarapacá (UTA), Laboratorio de Ecología de Ambientes Fragmentados (LEAF), Museo Nacional de Historia Natural of Santiago de Chile (MNHNCL), Entomological collection of the Museo Luis Peña at the Universidad de Chile (MEUC); Entomological collection of the Museo de Ciencias Naturales of the Fundación Miguel Lillo (IFML), and Museo de Zoología of the Universidad de Los Lagos (MZULA). Vouchers for individuals of *P. meridionalis* are not available according to IFML curator (Emilia Pérez personal communication). Records by flower fly species were ordered by latitude and province. The extent of occurrence (EOO), area of occupancy (AOO), number of localities, and subpopulations of flower fly species were calculated using the ConR package (Dauby et al. 2017) in RStudio software v. 4.4.2 (R Development Core Team 2022). Distribution maps were created with QGIS software v. 3.32.2 (QGIS Development Team 2022). All datasets are available in the supplemental data of this paper.

Generic treatment was initially proposed according to Thompson (1999); notably, for *Eristalinus* Rondani, 1845, veins R_1 closed, R_{4+5} strongly petiolate, and eyes with vertical bands—for subgenus *Eristalodes* Mik—were the primary diagnostic traits observed on photos. For *Toxomerus* Macquart, 1855 triangular emargination of the posterior margin of the eyes, well development of the facial tubercle, and projection of the face were the main traits (Thompson 1999; Mengual et al. 2018). On the other hand, *Pseudoscaeva* Vockeroth, 1969, was identified by photo following the key to genera according to Mengual et al. (2018) where vein M_1 slightly petiolate, vein R_{4+5} straight, wing almost hyaline except microtrichose on apical $\frac{1}{4}$, and abdominal markings never derived from medial pair of stripes were the most critical morphological traits (see resembling morphological characteristics of *P. diversifasciatus* Knab; Mengual et al. 2018: fig. 46). Thus, the taxonomic identification of all *E. taeniops* records followed the key to species provided by Smit et al. (2017); for *T. politus* we used the diagnosis provided by Borges and Couri (2009), while for *P. meridionalis*, preliminarily we discriminate our target species from *P. diversifasciatus* using the original description by Knab (1914) and then, corroborating the new record with the description provided by Fluke (1951) and individuals housed in the IFML from Argentina. Finally, we separated *P. meridionalis* from *P. schoenemanni* (Enderlein, 1938) using their original description and the specimens identified by C. F. Thompson, deposited in the MEUC collection, photographed, and shown in Barahona-Segovia et al. (2021), while for *P. sericea* (Walker, 1836) we used the species' original description. The traits were: (1) darker antennae in *P. meridionalis* compared to the antennae of *P. schoenemanni* which are blackish dorsally and orange ventrally, and *P. sericea* which has red antennae; (2) blackish thorax with bronze highlights in *P. meridionalis* compared to the thorax of *P. schoenemanni* which is pale greenish and that of *P. sericea* which is pale steel; (3) yellow scutellum in *P. meridionalis* compared to *P. schoenemanni* and *P. sericea* which have reddish-brown scutellum; (4) the presence of black, yellow and grey-bluish abdominal vittae in *P. meridionalis*, compared to *P. schoenemanni* which has greyish, shiny macules, and to *P. sericea* which has black abdomen with violet sheens on the anterior and posterior margins of the abdominal segments; and (5) hyaline wings in *P. meridionalis* compared to *P. schoenemanni* and *P. sericea* which appear to have iridescence on their wings (Walker 1836; Enderlein 1938). The identification section provided here for all flower fly species follows the terminology of van Steenis et al. (2023).

All flower-fly records are available in the supplementary Table S1. As the records often focus only on the syrphids, plant identification was not always possible at the species level. Many plants were identified only at the genus level, and within the aster family, and many were classified as a group of potential genera (e.g., complex *Hypochaeris/Taraxacum*). Thus, exotic plant identification was carried out with the illustrated guide for exotic plants cultivated in Chile (Macaya-Berti et al. 2024; <https://www.chlorischile.cl/>) was used for exotic plants and Teillier et al. (2022) was used for native plants. Plant identification was accompanied by a record of the plant family and the origin of the plant species (introduced vs. native) (supplementary Table S2).

RESULTS

Order Diptera Linnaeus, 1758
Family Syrphidae Latreille, 1802
Subfamily Eristalinae Newman, 1838
Tribe Eristalini Newman, 1838

Genus *Eristalinus* Rondani, 1845

Eristalinus Rondani 1845: 453 (original description); Mik 1897: 114 (as *Lathyrphthalmus*); Kanervo 1938: 43 (as *Lathyrphthalmus*, subgenus of *Metalloeristalis*); Thompson 1999: 329 (key to genera), 340 (notes on taxa); Thompson 2003: 3, 10 (key, synonymy, and taxonomic notes); Smit et al. 2017: 574 (key).

Eristalinus (Eristalodes) taeniops (Wiedemann, 1818)

Figure 1A–F

New Records. MEXICO – BAJA CALIFORNIA • Playas Coronado, Tijuana; 32°31'56"N, 117°06'54"W; 18 m a.s.l.; 07.VII.2019; Eugenia Tutor obs.; photograph only; 1♂ • Jardines Playas de Tijuana; 32°31'23"N, 117°07'13"W; 24 m a.s.l.; 05.XI.2021; Efraín Aguilar obs.; photograph only; 1♂ • Col Madero (Cacho), Tijuana; 32°31'07"N, 117°01'47"W; 40 m a.s.l.; 05.I.2024; Daniel Bernal obs.; photograph only; 1♂ • Juárez Tijuana; 32°30'53"N, 117°02'18"W; 24 m a.s.l.; 29.IV.2022; Hazete Martínez-Nolasco obs.; photograph only; 1♂ • Anexa 20 de Noviembre; 32°30'50"N, 116°59'10"W; 34 m a.s.l.; 13.XI.2023; Alberto Ramírez M. obs.; photograph only; 1♂ • Chapultepec Alamar, Tijuana; 32°30'48"N, 116°57'18"W; 34 m a.s.l.; 28.XI.2021; bio_alchemist obs.; photograph only; 1♂ • Toribio Ortega avenue, Tijuana; 32°30'41"N, 117°03'16"W; 200 m a.s.l.; 17.IX.2022; Jesus200_awesome obs.; photograph only; 1♀ • Magaña, Tijuana; 32°29'51"N, 116°58'06"W; 68 m a.s.l.; 21.IX.2023; Diego Carrasco obs.; photograph only; 1♀ • Emperadores, Tijuana; 32°29'51"N, 116°57'53"W; 154 m a.s.l.; 05.VII.2020; srsvivos obs.; photograph only; 1♀ • Salvatierra, Tijuana;

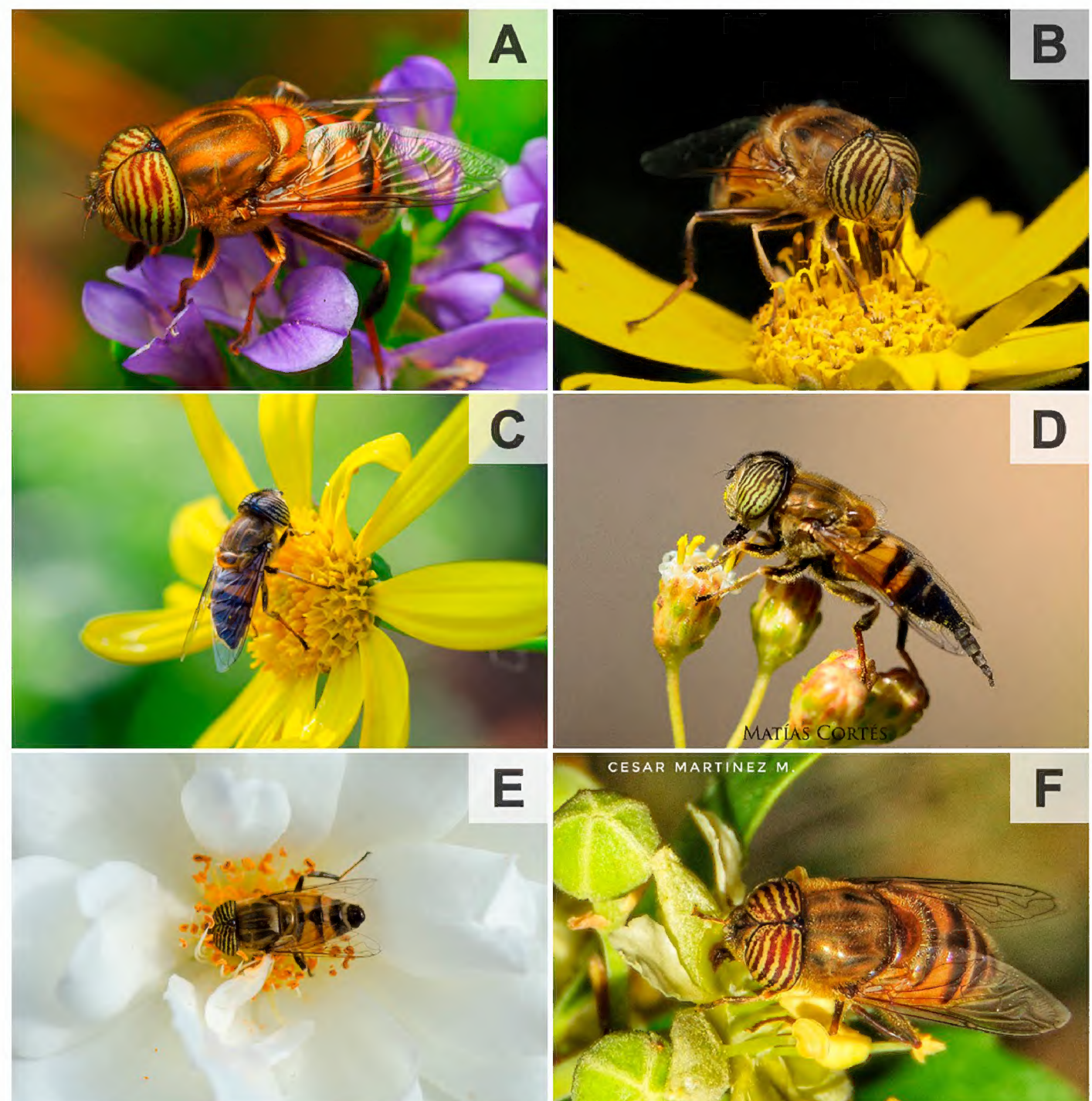


Figure 1. *Eristalinus taeniops* (Wiedemann, 1818). **A.** Male, lateral view and visiting *Solidago* sp. (photo by Adrián Olivares Trigos). **B.** Male, frontal view and visiting a flower of *Euryops pectinatus* (L.) Cass. (photo by Adrián Olivares Trigos). **C.** Female, lateral view and visiting a flower of *E. pectinatus* (photo by Gabriela Germain). **D.** Female, lateral view and visiting native flowers of *Baccharis* sp. L. (Photo by Matías Cortés). **E.** Male, dorsal view and visiting a flower of *Rosa* sp. (photo by Gabriela Germain). **F.** Male, dorsal view and visiting flower of the native tree *Quillaja Saponaria* Molina (photo by César Martínez).

32°29'02"N, 117°03'58"W; 245 m a.s.l.; 09.VII.2019; Georgina López obs.; photograph only; 1♀ • Presa Abelardo Rodríguez, Tijuana; 32°26'23"N, 116°54'44"W; 107 m a.s.l.; 08.VIII.2018; Rosy Rubio obs.; photograph only; 1♂ • La Higuera; 32°25'00"N, 116°56'31"W; 296 m a.s.l.; VII.2021; Ezequiel Enríquez Díaz obs.; photograph only; 1♂ • Cervecera Kiriakides, Playas de Rosarito; 32°21'24"N, 117°03'44"W; 296 m a.s.l.; 02.VII.2020; Víctor Medrano obs.; photograph only; 1♀ • Col Santa Anita, Playas La Misión; 32°06'07"N, 116°52'11"W; 25 m a.s.l.; 16.III.2020; Andrea Navarro obs.; photograph only; 1♂ • Viñas del Sol; 32°00'32"N, 116°40'46"W; 292 m a.s.l.; 06.IV.2019; rocha_2998 obs.; photograph only; 1♂ • Villas de San Miguel; 31°54'21"N, 116°43'56"W; 6 m a.s.l.; 23.V.2024; Mariana Delgado-Fernández obs.; photograph only; 1♂ • Unidad deportiva Los Encinos, Ensenada; 31°54'30"N, 116°36'25"W; 93 m a.s.l.; 30.XI.2021; Rafael Paredes obs.; photograph only; 1♂ • Plácido Mata road, Ensenada; 31°53'28"N, 116°36'55"W; 35 m a.s.l.; 07.VIII.2022; Álvaro San José obs.; photograph only; 1♀ • Privada Pirúl, Ensenada; 31°53'23"N, 116°36'48"W; 79 m a.s.l.; 20.IV.2020; Ramona Olimpia obs.; photograph only; 1♂ • Calle Alemania, Ensenada; 31°53'11"N, 116°34'59"W; 99 m a.s.l.; 12.IX.2020; abelardoc obs.; photograph only; 1♂ • Pedregal Playitas; 31°52'21"N, 116°39'47"W; 36 m a.s.l.; 24.V.2019; Pedro Maldonado obs.; photograph only; 1♀ • Olivos road, Ensenada; 31°52'21"N, 116°36'16"W; 15 m a.s.l.; 01.VII.2024; Liliana Reyes obs.; photograph only; 1♀ • Bustamante, Ensenada; 31°52'00"N, 116°35'47"W; 39 m a.s.l.; 23.VI.2021; sirius8 obs.; photograph only; 1♀ • Universidad Autónoma de Baja California; 31°51'53"N, 116°40'05"W; 11 m a.s.l.; 20.X.2022; Ezequiel Enríquez Díaz obs.; photograph only; 1♀ • Granados, Ensenada; 31°51'36"N, 116°36'26"W; 19 m a.s.l.; 03.V.2022; Alonso Sánchez Díaz obs.; photograph only; 1♀ – COSTA RICA – ALAJUELA • Valverde Vega; 10°11'20"N, 084°13'59"W; 2,522 m a.s.l.; 24.VIII.2019; Giovanna Rojas M. obs.; photograph only; 1♀ – ECUADOR – IMBABURA • Urcuquí; 00°24'18"N, 078°10'35"W; 18.VII.2023; 2,302 m a.s.l.; Gabriel Frost obs.; photograph only; 1♂ • Pimampiro; 00°23'34"N, 077°56'58"W; 02.VIII.2020; 2,302 m a.s.l.; entoagroun obs.; photograph only; 1♀ • Pimampiro; 00°23'34"N, 077°56'58"W; 02.VIII.2020; 2,302 m a.s.l.; entoagroun obs.; photograph only; 1♀ • Ibarra; 00°20'47"N, 078°06'31"W; 20.III.2022; 2,217 m a.s.l.; Jorge Andrade Benítez obs.; photograph only; 1♀ • Ibarra; 00°20'19"N, 078°07'20"W; 25.X.2020; 2,219 m a.s.l.; aida_ibaquingo obs.; photograph only; 1♀ • Ibarra; 00°19'39"N, 078°07'57"W; 19.VI.2024; 2,256 m a.s.l.; Francis Hernández obs.; photograph only; 1♂ • Laguna Cuicocha, Cotacachi; 00°17'37"N, 078°20'57"W; 24.I.2024; 3,097 m a.s.l.; Pierre Bonmarriage obs.; photograph only; 1♂ – PICHINCHA • Hacienda Tanlahua; 0°03'12"N, 078°27'06"W; 08.VI.2021; 2,430 m a.s.l.; Alexander Chipantashi obs.; photograph only; 1♀ • Cayambe; 00°02'44"N,

078°08'17"; 06.VIII.2020; 2,832 m a.s.l.; entoagroun obs.; photograph only; 1♀ • Cayambe; 00°02'20"N, 078°08'55"W; 14.VII.2020; 2,774 m a.s.l.; Nelsinho14 obs.; photograph only; 1♀ • San Luis de Huarahui; 00°02'38"N, 078°12'58"W; 24.V.2021; 2,865 m a.s.l.; a-car0-j-h obs.; photograph only; 1♀ • San Luis de Huarahui, Pacifico Proaño, Pedro Moncayo; 00°02'41"N, 078°13'32"W; 04.V.2023; 2,862 m a.s.l.; Megan Saunders obs.; photograph only; 1♂ • Malchingi; 00°02'33"N, 078°20'31"W; 18.II.2024; 2,716 m a.s.l.; Javier Perugachi obs.; photograph only; 1♂ • San Antonio de Pichincha; 00°00'24"S, 078°27'24"W; 01.V.2023; 2,453 m a.s.l.; Diego Inclan obs.; photograph only; 1♀ • Zabala; 00°04'15"S, 078°24'40"W; 13.XI.2022; 2,710 m a.s.l.; Baruckgarofalo obs.; photograph only; 1♀ • Pusuqui, Chico Alto; 00°04'24"S, 078°28'37"W; 11.IV.2023; 2,551 m a.s.l.; Alejandro Alfredo Aguirre obs.; photograph only; 1♂ • Carcelén, Quito; 00°05'15"S, 078°28'08"W; 28.VI.2020; 2,745 m a.s.l.; Evelyn Bolaños obs.; photograph only; 1♂ • Diego Vásquez de Cepeda avenue, Quito; 00°05'51"S, 078°29'00"W; 14.VII.2023; 2,767 m a.s.l.; Nickss Bonilla obs.; photograph only; 1♂ • El Quinche; 00°06'01"S, 078°18'03"W; 07.III.2021; 2,618 m a.s.l.; Stephanie Ann obs.; photograph only; 1♀ • Carretas, Quito; 00°06'19"S, 078°26'48"W; 25.V.2020; 2,665 m a.s.l.; anaisable obs.; photograph only; 1♀ • Comité del Pueblo; 00°07'18"S, 078°28'14"W; 09.VIII.2021; 2,935 m a.s.l.; Mauricio Regalado obs.; photograph only; 1♀ • Checa; 0°07'35"S, 078°18'42"W; 03.XII.2022; 2,576 m a.s.l.; Maycoll Riera obs.; photograph only; 1♀ • La Concepción, Quito; 00°07'41"S, 078°29'22"W; 31.X.2020; 2,816 m a.s.l.; Sofía Muñoz-Tobar obs.; photograph only; 1♀ • José Felix Borreiro, Quito; 00°08'40"S, 078°27'46"W; 10.VI.2024; 2,904 m a.s.l.; Francisco Prieto obs.; photograph only; 1♂ • Yaruquí; 0°09'14"S, 078°19'16"W; 26.V.2023; 2,534 m a.s.l.; Angie Garzón obs.; photograph only; 1♂ • Yaruquí; 00°10'03"S, 078°18'57"W; 04.IV.2023; 2,561 m a.s.l.; Tatiana Arroba obs.; photograph only; 1♂ • Chochapamba Sur, Quito; 00°09'35"S, 078°30'09"W; 27.IV.2019; 2,959 m a.s.l.; Edison Ocaña obs.; photograph only; 1♂ • Río Coca e Isla Fernandina, Quito; 00°09'43"S, 078°28'49"W; 17.IV.2021; 2,797 m a.s.l.; Rocío Ayala obs.; photograph only; 1♀ • De Los Colimes, Quito; 00°10'00"S, 078°28'28"W; 16.IV.2024; 2,807 m a.s.l.; Diego Galárraga obs.; photograph only; 1♂ • Parque Metropolitano Guangüiltagua, Bellavista; 00°10'35"S, 078°27'40"W; 24.III.2024; 2,976 m a.s.l.; Diego Galárraga obs.; photograph only; 1♂ • Parque Metropolitano Guangüiltagua, Bellavista; 00°10'41"S, 078°28'01"W; 20.VI.2020; 2,934 m a.s.l.; David Torres obs.; photograph only; 1♂ • Parque Metropolitano Guangüiltagua, Bellavista; 00°10'50"S, 078°28'04"W; 18.I.2024; 2,928 m a.s.l.; Aracely Haro obs.; photograph only; 1♀ • Parque Metropolitano Guangüiltagua, Bellavista; 00°10'49"S, 078°28'02"W; 07.III.2021; 2,928 m a.s.l.; Francisco Prieto obs.; photograph only; 1♂ • San Gabriel, Quito; 00°10'49"S, 078°30'02"W; 30.VI.2019; 2,893 m a.s.l.; osoandino obs.; photograph only; 1♀ • Parque La Carolina, Quito; 00°11'07"S, 078°29'08"W; 01.II.2019; 2,781 m a.s.l.; Lila Higgins obs.; photograph only; 1♀ • Talabela, Quito; 00°10'53"S, 078°20'55"W; 04.III.2024; 2,452 m a.s.l.; Pierre Bonmarriage obs.; photograph only; 1♂ • San Pedro, Quito; 00°11'23"S, 078°20'07"W; 17.V.2022; 2,538 m a.s.l.; Walter Vivas obs.; photograph only; 1♀ • Parque El Reservorio, Quito; 00°11'30"S, 078°25'34"W; 10.II.2023; 2,358 m a.s.l.; Diego Galárraga obs.; photograph only; 1♂ • Conjunto Paraíso, Quito; 00°11'34"S, 078°23'01"W; 12.III.2022; 2,362 m a.s.l.; Camila Jacomee obs.; photograph only; 1♂ • Talabela, road to Gruta del Niño, Quito; 00°11'49"S, 078°18'42"W; 25.XII.2022; 2,863 m a.s.l.; Walter Vivas obs.; photograph only; 1♀ • Urbanización Los Algarrobos de la Viña, Quito; 00°11'52"S, 078°24'15"W; 16.VII.2021; 2,310 m a.s.l.; David Torres obs.; photograph only; 1♀ • González Suarez, Quito; 00°11'44"S, 078°28'43"W; 01.IV.2020; 2,812 m a.s.l.; David Díaz obs.; photograph only; 1♀ • Mariana de Jesus, Quito; 00°11'16"S, 078°29'37"W; 19.XI.2022; 2,827 m a.s.l.; Andy Sofy obs.; photograph only; 2♀ • Universidad Central de Ecuador, Quito; 00°12'01"S, 078°30'26"W; 10.V.2023; 2,871 m a.s.l.; Elizabeth Vila obs.; photograph only; 1♀ • Pifo, Quito; 00°12'44"S, 078°19'56"W; 01.V.2023; 2,552 m a.s.l.; Mayrilis Coro obs.; photograph only; 1♀ • De Los Conquistadores, Quito; 00°12'01"S, 078°21'23"W; 03.VI.2021; 2,871 m a.s.l.; Micaela Pérez obs.; photograph only; 1♂ • Rita Lecumberry, Quito; 00°12'54"S, 078°24'31"W; 24.III.2019; 2,341 m a.s.l.; Sofía Nogales obs.; photograph only; 1♀ • Barrio Tola Chica, Tumbaco, Quito; 00°13'18"S, 078°22'32"W; 22.III.2020; 2,443 m a.s.l.; David Torres obs.; photograph only; 1♀ • Yaku Parque Museo del Agua, Quito; 00°13'02"S, 078°31'09"W; 25.XI.2018; 2,928 m a.s.l.; Jorge Bedoya obs.; photograph only; 1♀ • Manuel Lobera, Quito; 00°13'13"S, 078°30'10"W; 25.XII.2023; 2,902 m a.s.l.; Nicole Saragosin obs.; photograph only; 1♀ • Campo Docente Experimental La Tola, Pifo, Quito; 00°13'52"S, 078°22'09"W; 12.VI.2019; 2,497 m a.s.l.; Roger Loachamin obs.; photograph only; 1♂ • Campo Docente Experimental La Tola, Pifo, Quito; 00°13'54"S, 078°21'59"W; 23.V.2020; 2,515 m a.s.l.; David Torres obs.; photograph only; 1♂ • Campo Docente Experimental La Tola, Pifo, Quito; 00°13'45"S, 078°22'17"W; 15.XI.2018; 2,479 m a.s.l.; Isaac95 obs.; photograph only; 1♀ • Cuevas del Llalo, Quito; 00°13'55"S, 078°24'47"W; 06.VIII.2022; 2,590 m a.s.l.; Diego Torres Sierra obs.; photograph only; 1♀ • Rio Ambi y Peguche, Quito; 00°13'53"S, 078°22'17"W; 12.XII.2020; 2,862 m a.s.l.; Alejandra López obs.; photograph only; 1♀ • Tumbaco, Quito; 00°14'06"S, 078°23'57"W; 22.II.2020; 2,513 m a.s.l.; José Granizo obs.; photograph only; 1♂ • Tumbaco, Quito; 00°14'15"S, 078°24'25"W; 30.IV.2021; 2,638 m a.s.l.; David Torres obs.; photograph only; 1♂ • Hondonada, Quito; 00°14'32"S, 078°24'30"W; 30.IV.2021; 2,839 m a.s.l.; David Torres obs.; photograph only; 1♀ • San José de Monjas, Quito; 00°14'43"S, 078°30'14"W; 23.V.2022; 2,924 m a.s.l.; Jenni Sierra obs.; photograph only; 1♂ • La Magdalena, Quito; 00°14'40"S, 078°31'34"W; 13.VIII.2023; 2,813 m a.s.l.; Melany Martínez obs.; photograph only; 1♀ • Parque Chilibulo, Quito; 00°14'43"S, 078°32'33"W; 30.III.2023; 2,895 m a.s.l.; Nicolas Fierro obs.; photograph only; 1♂ • Isla San Cristóbal & Isla Isabela, Quito; 00°15'09"S, 078°28'45"W;

10.III.2022; 2,778 m a.s.l.; Yadira2020 obs.; photograph only; 1♂ • Redondel Atahualpa, Quito; 00°14'32"S, 078°31'50"W; 28.VIII.2020; 2,825 m a.s.l.; Nory Salazar obs.; photograph only; 1♀ • Atahualpa, Quito; 00°15'05"S, 078°32'12"W; 22.IV.2022; 2,843 m a.s.l.; Ángel López obs.; photograph only; 1♂ • Parque de los Tubos, Quito; 00°15'53"S, 078°32'32"W; 14.X.2023; 2,854 m a.s.l.; Matheo González obs.; photograph only; 1♀ • Conocoto, Quito; 00°17'01"S, 078°29'28"W; 24.III.2020; 2,661 m a.s.l.; Nikole Obregon obs.; photograph only; 1 ind. • Parque Las Cuadras, Quito; 00°17'16"S, 078°32'51"W; 09.XI.2020; 2,894 m a.s.l.; Daniela Sisalema obs.; photograph only; 1♀ • Primicias de Las Culturas de Quito; 00°17'37"S, 078°33'38"W; 24.V.2023; 2,936 m a.s.l.; Wendy Ipiales obs.; photograph only; 1♂ • Susana Letor, Quito; 00°18'22"S, 078°32'17"W; 04.IV.2023; 2,913 m a.s.l.; Eduardo Roca obs.; photograph only; 1♂ • Pueblo Solo, Quito; 00°18'29"S, 078°32'57"W; 31.VIII.2021; 2,941 m a.s.l.; Gordon251 obs.; photograph only; 1♀ • Universidad de Las Fuerzas Armadas ESPE, Quito; 00°18'49"S, 078°26'36"W; 14.V.2024; 2,502 m a.s.l.; María Emilia Durán obs.; photograph only; 1♂ • Universidad de Las Fuerzas Armadas ESPE, Quito; 00°18'53"S, 078°26'38"W; 03.I.2024; 2,502 m a.s.l.; Milena Vera obs.; photograph only; 1♂ • Las Dalias, Rumiñahui, Quito; 00°19'59"S, 078°27'51"W; 03.VII.2024; 2,506 m a.s.l.; Adriana Micaela obs.; photograph only; 1♀ • San Francisco de Alpahuma, Sangolquí, Quito; 0°20'08"S, 078°24'42"W; 27.IV.2024; 2,610 m a.s.l.; Carolina Ramírez obs.; photograph only; 1♂ • Hacienda Santa Isabel, San Rafael Quito; 00°20'05"S, 078°28'52"W; 03.III.2021; 2,523 m a.s.l.; Emily Cevallos obs.; photograph only; 1♀ • Rumiñahui, Quito; 00°20'20"S, 078°25'59"W; 26.I.2019; 2,528 m a.s.l.; L. Vivar obs.; photograph only; 1♂ • Parque Ciudad Jardín, Quito; 00°20'24"S, 078°31'48"W; 02.VIII.2022; 3,033 m a.s.l.; Mikaela Pavón obs.; photograph only; 1♀ • Cancha de Cuendina, Quito; 00°22'15"S, 078°28'28"W; 18.II.2021; 2,597 m a.s.l.; hercaomarg obs.; photograph only; 1♂ • Cancha Salgado y Parque, Quito; 00°22'29"S, 078°26'15"W; 15.VI.2021; 2,723 m a.s.l.; David Narváez obs.; photograph only; 1 ind. • Rumiñahui avenue, Mejía; 00°27'59"S, 078°35'28"W; 07.V.2022; 2,947 m a.s.l.; Mikaela Pavón obs.; photograph only; 1♀ – **COTOPAXI** • Mulalo; 00°43'23"S, 078°34'38"W; 16.III.2023; 3,119 m a.s.l.; Dania Valencia obs.; photograph only; 1♀ • Tanicuchi; 00°44'56"S, 078°39'40"W; 07.V.2021; 3,152 m a.s.l.; Marcelo Amores obs.; photograph only; 1♂ 1♀ • Latacunga; 00°45'00"S, 078°39'21"W; 19.III.2021; 3,113 m a.s.l.; Marcelo Amores obs.; photograph only; 1♂ • Tanicuchi; 00°45'14"S, 078°39'55"W; 14.IV.2021; 3,145 m a.s.l.; Marcelo Amores obs.; photograph only; 1♂ • Latacunga; 00°45'35"S, 078°39'44"W; 30.IV.2023; 3,104 m a.s.l.; Marcelo Amores obs.; photograph only; 1♀ • Alagues; 00°50'55"S, 078°32'49"W; 27.III.2023; 3,092 m a.s.l.; Dania Valencia obs.; photograph only; 1♂ • Alagues; 00°51'28"S, 078°35'20"W; 10.V.2024; 2,912 m a.s.l.; Diego Fernando obs.; photograph only; 1♂ • Alagues; 00°51'46"S, 078°34'51"W; 29.VI.2024; 2,995 m a.s.l.; Mayrilis Coro obs.; photograph only; 1♀ • Juan Montalvo; 00°55'04"S, 078°34'48"W; 05.VIII.2022; 2,907 m a.s.l.; Diego Fernando obs.; photograph only; 1♂ • Ordoñez y Quijano, Latacunga; 00°56'10"S, 078°36'47"W; 19.XI.2022; 2,774 m a.s.l.; Bryan Soria obs.; photograph only; 1 ind. • Pujili; 00°56'20"S, 078°42'41"W; 06.II.2021; 3,111 m a.s.l.; melannievnl obs.; photograph only; 1♀ • Salache; 00°56'20"S, 078°37'36"W; 13.XII.2022; 2,830 m a.s.l.; Maribel Allaica obs.; photograph only; 1♀ • Hacienda Vásconez; 00°59'57"S, 078°37'31"W; 19.XI.2022; 2,746 m a.s.l.; Bryan Soria obs.; photograph only; 1♀ • San Miguel; 01°00'35"S, 078°35'47"W; 05.V.2023; 2,668 m a.s.l.; Diego Fernando obs.; photograph only; 1♂ • Salcedo; 01°02'32"S, 078°35'27"W; 08.I.2023; 2,650 m a.s.l.; Dania Valencia obs.; photograph only; 1♂ • Salcedo; 01°04'01"S, 078°34'19"W; 12.VIII.2023; 2,573 m a.s.l.; Esteban Poveda obs.; photograph only; 1♂ – **MANABÍ** • Manta; 00°58'04"S, 080°42'32"W; 14.VI.2020; 30 m a.s.l.; Stephany Loor obs.; photograph only; 1♂ – **TUNGURAHUA** • Pasteur avenue, Ambato; 01°13'57"S, 078°36'41"W; 23.VI.2021; 2,468 m a.s.l.; David Díaz obs.; photograph only; 1♀ • Simón Bolívar, Ambato; 01°15'46"S, 078°37'03"W; 13.XI.2022; 2,690 m a.s.l.; Nathaly Obregón obs.; photograph only; 1♀ • Parroquia Celiano Monge, Ambato; 01°16'54"S, 078°37'30"W; 05.VI.2020; 2,743 m a.s.l.; Esteban Poveda obs.; photograph only; 1♂ – **CHIMBORAZO** • Riobamba; 01°39'06"S, 078°41'01"W; 12.VII.2023; 2,828 m a.s.l.; Vinicio Rodríguez obs.; photograph only; 1♂ • Lizarzaburu; 01°40'04"S, 078°39'43"W; 05.XII.2022; 2,770 m a.s.l.; Andrés Mena obs.; photograph only; 1♀ – **CAÑAR** • San Miguel de Porotos; 02°48'54"S, 078°50'31"W; 21.XI.2020; 2,770 m a.s.l.; Fabricio Mora obs.; photograph only; 1♂ – **AZUAY** • Machangara; 02°51'23"S, 078°57'57"W; 06.IX.2023; 2,581 m a.s.l.; Edgar Segovia obs.; photograph only; 1♂ • Machangara, Hermano Miguel, Cuenca; 02°52'33"S, 078°59'25"W; 17.VI.2020; 2,539 m a.s.l.; Gustavo Morejon obs.; photograph only; 1♀ • Gil Ramírez Dávalos, Cuenca; 02°53'35"S, 079°01'04"W; 23.IV.2020; 2,568 m a.s.l.; Edgar Segovia obs.; photograph only; 1♂ • Monay, Cuenca; 02°53'44"S, 078°58'09"W; 21.XI.2020; 2,454 m a.s.l.; Pedro Silva obs.; photograph only; 1♂ • Cuenca; 02°54'00"S, 079°00'21"W; 26.V.2015; 2,551 m a.s.l.; Félix Fleck obs.; photograph only; 1♂ • Campus central, Universidad de Cuenca; 02°54'02"S, 079°00'37"W; 28.I.2021; 2,534 m a.s.l.; Jonathan Aguirre obs.; photograph only; 1♂ • Todos Los Santos church, Cuenca; 02°54'11"S, 079°00'10"W; 28.IV.2024; 2,524 m a.s.l.; karinapt23 obs.; photograph only; 1♀ • Parque El Paraíso, Cuenca; 02°54'34"S, 078°59'14"W; 29.XI.2020; 2,489 m a.s.l.; Pamela Andrade obs.; photograph only; 1♀ • Parque El Paraíso, Cuenca; 02°54'34"S, 078°59'14"W; 29.X.2020; 2,489 m a.s.l.; Pedro Silva obs.; photograph only; 2♀ • Parque El Paraíso, Cuenca; 02°54'34"S, 078°59'14"W; 26.V.2015; 2,489 m a.s.l.; Félix Fleck obs.; photograph only; 1♂ • Parque El Paraíso, Cuenca; 02°54'34"S, 078°59'14"W; 25.X.2020; 2,489 m a.s.l.; Lenin Parra obs.; photograph only; 1♀ • Yanuncay, Cuenca; 02°54'43"S, 079°01'12"W; 20.VII.2017; 2,549 m a.s.l.; Jonathan Aguirre obs.; photograph only; 1♀ • Parque Lineal Yanuncay, Cuenca; 02°54'51"S, 079°00'39"W; 20.VII.2017; 2,534 m a.s.l.; Jonathan Aguirre obs.; photograph only; 1♀ • Jacinto Flores, Cuenca; 02°54'55"S,

079°00'08"W; 15.XII.2023; 2,515 m a.s.l.; Edgar Segovia obs.; photograph only; 1♀ • Jardín Botánico, Cuenca; 02°54'59"S, 079°00'11"W; 20.VIII.2020; 2,517 m a.s.l.; Jonathan Aguirre obs.; photograph only; 1♀ • Jardín Botánico, Cuenca; 02°54'59"S, 079°00'11"W; 12.II.2023; 2,517 m a.s.l.; franciscom93 obs.; photograph only; 1♀ • Jardín Botánico, Cuenca; 02°54'59"S, 079°00'11"W; 03.III.2022; 2,517 m a.s.l.; Daniel Reyes obs.; photograph only; 1♂ • Vista Hermosa, Cuenca; 02°55'41"S, 079°00'06"W; 23.XII.2023; 2,698 m a.s.l.; Alejandro Lugo obs.; photograph only; 1♂ – **LOJA** • Zamora Hyatco, Loja; 04°00'32"S, 079°11'10"W; 22.V.2019; 2,107 m a.s.l.; Ricardo Albuja obs.; photograph only; 1♂ – **PERU** – **CAJAMARCA** • Cataratas de Llanacora; 07°11'09"S, 078°25'26"W; 25.IV.2023; 2,713 m a.s.l.; Luis Ramírez obs.; photograph only; 1♂ • La Paccha; 07°12'05"S, 078°28'52"W; 01.V.2023; 2,653 m a.s.l.; Rodney Herrera obs.; photograph only; 1♂ – **LA LIBERTAD** • Jirón Agua de Los Pajaritos, Huamachuco; 07°49'17"S, 078°02'50"W; 29.VII.2023; 3,262 m a.s.l.; Milagros Gilian obs.; photograph only; 1♀ – **LIMA** • Ancón; 11°44'07"S, 077°08'48"W; 16.X.2020; 71 m a.s.l.; Olenka Chienda, Patrick Gamero, Jordi Tarazona obs.; photograph only; 1♂ • San Jerónimo de Surco, Huarochiri; 11°53'11"S, 076°26'28"W; 25.VII.2023; 2,017 m a.s.l.; Andrés Ochoa obs.; photograph only; 1♀ • Urbanización Los Girasoles de Huampani; 11°58'08"S, 076°47'01"W; 31.XII.2021; 690 m a.s.l.; capacoscar obs.; photograph only; 1♀ • Lepentas, San Luis de Lurigancho; 12°01'02"S, 077°00'22"W; 28.XII.2020; 207 m a.s.l.; Lenin Chumbe obs.; photograph only; 1♂ • Horacio Zevallos Games; 12°01'05"S, 076°50'18"W; 27.IX.2020; 207 m a.s.l.; Beth Moon obs.; photograph only; 1♀ • Universidad Nacional de Ingeniería; 12°01'26"S, 077°02'54"W; 02.XII.2023; 112 m a.s.l.; Carlos Pérez obs.; photograph only; 1♂ • Condevilla Señor, San Martín de Porres; 12°01'45"S, 077°04'40"W; 24.XII.2022; 112 m a.s.l.; beaubadger obs.; photograph only; 1♀ • Callao; 12°03'47"S, 077°09'06"W; 22.III.2022; 2 m a.s.l.; jocean obs.; photograph only; 1♂ • Circunvalación del Golf Los Incas; 12°05'21"S, 076°57'51"W; 28.VI.2022; 203 m a.s.l.; Manuel Pollack obs.; photograph only; 1♂ • Circunvalación del Golf Los Incas; 12°05'21"S, 076°57'51"W; 28.VI.2022; 203 m a.s.l.; Manuel Pollack obs.; photograph only; 1♂ • San Juan de Miraflores; 12°09'53"S, 076°56'37"W; 03.XII.2021; 195 m a.s.l.; Thalia Hurtado obs.; photograph only; 1♀ • Lomas de Lúcumo, Pachacamac; 12°09'53"S, 076°53'17"W; 08.X.2022; 437 m a.s.l.; Brandon Ortiz obs.; photograph only; 1♂ • Lurín, El Olivar sector Río; 12°13'53"S, 076°52'50"W; 19.XII.2020; 43 m a.s.l.; Ruth Gutiérrez obs.; photograph only; 1♀ • Julio César Tello; 12°14'46"S, 076°53'39"W; 26.VI.2021; 69 m a.s.l.; Ellky Arteta obs.; photograph only; 1♂ • Río Lurín; 12°14'46"S, 076°53'37"W; 26.VI.2021; 65 m a.s.l.; Ruth Gutiérrez obs.; photograph only; 1♂ • Bellavista avenue; 12°15'14"S, 076°52'23"W; 02.VI.2024; 36 m a.s.l.; Geancarlo Alarcón obs.; photograph only; 1♂ • Bellavista avenue; 12°15'14"S, 076°52'23"W; 02.II.2023; 36 m a.s.l.; Brandon Ortiz obs.; photograph only; 1♂ • Hacienda Buenavista (Puquial); 12°15'15"S, 076°52'26"W; 07.III.2022; 25 m a.s.l.; Ruth Gutiérrez obs.; photograph only; 1♀ • Puquial Buenavista; 12°15'15"S, 076°52'26"W; 02.II.2023; 26 m a.s.l.; aried obs.; photograph only; 1♂ • Puquial Buenavista; 12°15'15"S, 076°52'26"W; 10.I.2022; 24 m a.s.l.; Ellky Arteta obs.; photograph only; 1♂ • Lurín; 12°15'59"S, 076°53'54"W; 29.XII.2022; 5 m a.s.l.; Ellky Arteta obs.; photograph only; 1♂ • Pucusana; 12°28'33"S, 076°44'14"W; 18.VII.2022; 38 m a.s.l.; Andrés Ochoa obs.; photograph only; 1♂ – **AYACUCHO** • Huanta; 12°55'51"S, 074°13'23"W; 31.X.2021; 2,871 m a.s.l.; Yakelin Núñez obs.; photograph only; 1♀ • Huanta; 12°55'53"S, 074°13'45"W; 26.XII.2021; 2,809 m a.s.l.; Juan Gabriel Sulca obs.; photograph only; 1♀ • c.p. Huamanguilla; 13°00'33"S, 074°10'20"W; 26.V.2021; 3,278 m a.s.l.; Luz Huaman obs.; photograph only; 1♂ • Quinua; 13°02'16"S, 074°07'24"W; 28–29.IV.2023; 3,534 m a.s.l.; Museo de Insectos Ayacucho obs.; photograph only; 1♂ 1♀ • Quinua; 13°02'16"S, 074°07'24"W; 22.IX.2023; 3,534 m a.s.l.; Museo de Insectos Ayacucho obs.; photograph only; 1♀ • Pacaycasa; 13°03'27"S, 074°12'34"W; 27.IV.2024; 2,545 m a.s.l.; Museo de Insectos Ayacucho obs.; photograph only; 1♀ • Tambillo, Muyurina; 13°06'49"S, 074°11'02"W; 31.XII.2021; 2,495 m a.s.l.; José Manuel Escarcena obs.; photograph only; 1♂ • Ayacucho; 13°07'32"S, 074°15'40"W; 31.XII.2021; 2,915 m a.s.l.; Mari García obs.; photograph only; 1♂ • Carretera Ayacucho-Hunta Totorilla-Polvorín; 13°08'11"S, 074°12'24"W; 02.I.2022; 2,614 m a.s.l.; Estrella Berrocal obs.; photograph only; 1♂ • Estadio San Vicente de Totorá; 13°08'16"S, 074°12'32"W; 26.XII.2021; 2,613 m a.s.l.; Marleny León obs.; photograph only; 1♂ • north Ayacucho; 13°08'16"S, 074°14'06"W; 16.VI.2022; 2,874 m a.s.l.; Fiorela Romero obs.; photograph only; 1♀ • Asociación Los Ángeles 28A, Ayacucho; 13°08'25"S, 074°13'20"W; 17.XII.2021; 2,801 m a.s.l.; Jakelyn Galindo obs.; photograph only; 1 ind. • Parque El Avión, Ayacucho; 13°08'35"S, 074°13'37"W; 03.I.2022; 2,809 m a.s.l.; Jessica Rodríguez obs.; photograph only; 1♀ • La Joya, Ayacucho; 13°08'37"S, 074°13'27"W; 31.XII.2021; 2,798 m a.s.l.; Luis Espinoza obs.; photograph only; 1♀ • Universidad Nacional San Cristóbal de Huamanga; 13°08'37"S, 074°13'29"W; 20.V.2022; 2,799 m a.s.l.; Carolina Sarita obs.; photograph only; 1♀ • Plaza Simón Bolívar; 13°08'40"S, 074°13'36"W; 24.XII.2021; 2,808 m a.s.l.; Susy Arango obs.; photograph only; 1♂ • Plaza Independencia, Ayacucho; 13°08'40"S, 074°13'30"W; 02.I.2022; 2,798 m a.s.l.; Wilmer Ronaldo obs.; photograph only; 1♀ • Universidad Nacional San Cristóbal de Huamanga; 13°08'37"S, 074°13'29"W; 21.VI.2021; 2,796 m a.s.l.; Ronald Iñausi obs.; photograph only; 1♀ • Universidad Nacional San Cristóbal de Huamanga; 13°08'37"S, 074°13'29"W; 24.X.2021; 2,791 m a.s.l.; Hellen Contreras obs.; photograph only; 1♀ • Universidad Nacional San Cristóbal de Huamanga; 13°08'41"S, 074°13'19"W; 24.X.2021; 2,791 m a.s.l.; Hellen Contreras obs.; photograph only; 1♀ • Universidad Nacional San Cristóbal de Huamanga; 13°08'41"S, 074°13'19"W; 20.VI.2020; 2,791 m a.s.l.; César Quispe obs.; photograph only; 1♀ • Universidad Nacional San Cristóbal de Huamanga; 13°08'41"S, 074°13'19"W; 03.VII.2021; 2,791 m a.s.l.; Yanet Tenorio obs.; photograph only; 1♀ • Andrés Avelino Caceres Dorregaray, Ayacucho; 13°08'43"S, 074°12'28"W; 11.XII.2021; 2,632 m a.s.l.; Luz

Chávez obs.; photograph only; 1♀ • Andrés Avelino Cáceres Dorregaray, Ayacucho; 13°08'43"S, 074°12'28"W; 28.XI.2021; 2,632 m a.s.l.; Fiorela Lapa obs.; photograph only; 1♂ • Río Totorillas, Andrés Avelino Cáceres Dorregaray, Ayacucho; 13°08'51"S, 074°12'30"W; 25.XII.2021; 2,667 m a.s.l.; Edmerson Cerón obs.; photograph only; 1♂ • Universidad Nacional San Cristóbal de Huamanga; 13°08'54"S, 074°13'18"W; 03.VII.2021; 2,782 m a.s.l.; Evelyn Salvatierra obs.; photograph only; 1♀ • Plaza Mariscal Cáceres; 13°08'58"S, 074°13'34"W; 25.XII.2021; 2,783 m a.s.l.; B. Kelly Yucra obs.; photograph only; 1♂ • Urbanización César Mujica Cacho; 13°09'00"S, 074°11'43"W; 26.XII.2021; 2,716 m a.s.l.; Rafael Huachaca obs.; photograph only; 1♂ • Jirón Las Orquídeas; 13°09'07"S, 074°13'28"W; 05.VII.2022; 2,771 m a.s.l.; Rafael Huachaca obs.; photograph only; 1♀ • Jirón Libertad, Urbanización Banco de la Nación; 13°09'07"S, 074°13'38"W; 20.XII.2021; 2,778 m a.s.l.; Milagros QH obs.; photograph only; 1♀ • Jirón José Olaya, Ayacucho; 13°09'10"S, 074°13'49"W; 04.I.2022; 2,796 m a.s.l.; Noemí Gómez obs.; photograph only; 1♂ • Jirón José Olaya, Ayacucho; 13°09'10"S, 074°13'49"W; 04.I.2022; 2,796 m a.s.l.; Noemí Gómez obs.; photograph only; 1♂ • Longitudinal de la Sierra; 13°09'10"S, 074°12'40"W; 11.VI.2022; 2,730 m a.s.l.; Mireya Curi obs.; photograph only; 1♂ • Zoológico Totorillas; 13°09'12"S, 074°12'37"W; 11.VI.2022; 2,659 m a.s.l.; Xena Melendez obs.; photograph only; 1♂ • Zoológico Totorillas; 13°09'12"S, 074°12'37"W; 06.XII.2021; 2,659 m a.s.l.; Sandra Tito obs.; photograph only; 1♂ • Parque EMADI; 13°09'14"S, 074°13'44"W; 03.I.2022; 2,788 m a.s.l.; heyshet obs.; photograph only; 1♂ • EMADI; 13°09'16"S, 074°13'48"W; 26.XII.2021; 2,796 m a.s.l.; Sandra Tito obs.; photograph only; 1 ind. • Parque Infantil Las Nazarenas; 13°09'17"S, 074°12'56"W; 05.XII.2021; 2,757 m a.s.l.; Jakelin Galindo obs.; photograph only; 1♂ • Parque San José; 13°09'19"S, 074°11'51"W; 17.X.2021; 2,730 m a.s.l.; Diana Tapia obs.; photograph only; 1♂ • Zoológico Totorillas; 13°09'28"S, 074°12'46"W; 12.VI.2024; 2,713 m a.s.l.; Flor Ortiz obs.; photograph only; 5♂ 1♀ 3 ind. • Zoológico Totorillas; 13°09'28"S, 074°12'46"W; 11.VI.2022; 2,713 m a.s.l.; Alex Rojas obs.; photograph only; 6♂ 2♀ 6 ind. • Universidad Nacional San Cristóbal de Huamanga; 13°09'41"S, 074°13'33"W; 29.VI.2022; 2,753 m a.s.l.; Lizet Mendoza obs.; photograph only; 1♂ • Parque de La Bandera; 13°09'44"S, 074°12'48"W; 25.VI.2022; 2,734 m a.s.l.; Ross Mery obs.; photograph only; 1♂ • Las Casuarinas avenue; 13°09'47"S, 074°12'51"W; 29.IV.2023; 2,733 m a.s.l.; Juan Gabriel Sulca obs.; photograph only; 1♀ • Huascara; 13°09'55"S, 074°14'56"W; 04.I.2022; 3,123 m a.s.l.; Blidy Vega obs.; photograph only; 1♂ • Alameda de la Independencia; 13°10'10"S, 074°13'38"W; 10.VII.2022; 2,750 m a.s.l.; Cindy Yaquelin obs.; photograph only; 1♀ • Parque El Diamante; 13°10'17"S, 074°11'32"W; 23.XII.2021; 2,620 m a.s.l.; Yenefer Barrientos obs.; photograph only; 1♀ • Huatatas; 13°10'23"S, 074°11'35"W; 27.XII.2021; 2,639 m a.s.l.; Alexandra Jiménez obs.; photograph only; 1♂ • Mirador de Acuchimay; 13°10'20"S, 074°13'18"W; 27.VI.2022; 2,868 m a.s.l.; Yenny01 obs.; photograph only; 1♂ • Huatatas; 13°10'24"S, 074°11'29"W; 04.VI.2022; 2,622 m a.s.l.; Kimberly Bustamante obs.; photograph only; 1♂ • Huatatas; 13°10'26"S, 074°11'30"W; 19.VI.2022; 2,631 m a.s.l.; Evelyn Gómez obs.; photograph only; 1♀ • Carmen Alto, sector 2; 13°10'30"S, 074°13'18"W; 24.XII.2021; 2,842 m a.s.l.; Zulma Castillo obs.; photograph only; 1♀ • Carmen Alto; 13°10'42"S, 074°13'43"W; 08.VII.2022; 2,802 m a.s.l.; Lizet Mendoza obs.; photograph only; 1♂ • Parque Miraflores; 13°10'42"S, 074°12'16"W; 11.VII.2022; 2,795 m a.s.l.; Frank Arimana obs.; photograph only; 4♂ 2♀ 7 ind. • Parque Miraflores; 13°10'42"S, 074°12'16"W; 03.XII.2021; 2,795 m a.s.l.; Gianela Tinco obs.; photograph only; 1♂ • Carmen Alto; 13°10'42"S, 074°13'47"W; 02.I.2022; 2,810 m a.s.l.; Cristian Cordova obs.; photograph only; 1♀ • Carmen Alto; 13°10'46"S, 074°13'49"W; 26.XII.2021; 2,813 m a.s.l.; Diego Castro obs.; photograph only; 1♂ • Casa Huerta, Ayacucho; 13°10'56"S, 074°13'54"W; 26.XII.2021; 2,824 m a.s.l.; Estefano GP obs.; photograph only; 1♂ • Casa Huerta, Ayacucho; 13°10'56"S, 074°13'54"W; 24.XII.2021; 2,824 m a.s.l.; Fredy Ochoa obs.; photograph only; 1♂ • El Carmen, sector 3; 13°10'58"S, 074°13'24"W; 07.XI.2021; 2,897 m a.s.l.; jackelyn_01 obs.; photograph only; 1♂ • pasaje Vista Alegre, Ayacucho Sur; 13°11'12"S, 074°13'70"W; 30.XI.2021; 2,912 m a.s.l.; Ana Gutiérrez obs.; photograph only; 1♂ • Santa Rosa avenue; 13°11'13"S, 074°11'32"W; 26.XII.2021; 2,675 m a.s.l.; Luz Landeo obs.; photograph only; 1♂ • Ayacucho avenue; 13°11'17"S, 074°12'46"W; 24.VI.2022; 2,875 m a.s.l.; Jhonny Campos obs.; photograph only; 1♀ • AH Las Lagunas de Quicapata; 13°11'23"S, 074°13'31"W; 22.XII.2021; 2,937 m a.s.l.; Paul Alfredo obs.; photograph only; 1♂ – **CUZCO** • Ollataytambo; 13°15'37"S, 072°16'07"W; 13.XI.2021; 2,843 m a.s.l.; Skjold Søndergaard obs.; photograph only; 1♀ • Ferrocarril avenue, Ollataytambo; 13°15'45"S, 072°16'04"W; 04.IX.2022; 2,843 m a.s.l.; Ollie Meidinger obs.; photograph only; 1♀ • Ferrocarril avenue, Urabamba; 13°18'13"S, 072°07'40"W; 10.II.2022; 2,865 m a.s.l.; Diego Balbuena obs.; photograph only; 1♂ • Urabamba; 13°18'11"S, 072°07'25"W; 03.III.2022; 2,865 m a.s.l.; Diego Balbuena obs.; photograph only; 1♀ • Cuzco; 13°32'27"S, 071°55'33"W; 25.XI.2023; 3,275 m a.s.l.; Gianela Curasco obs.; photograph only; 1♀ – **AREQUIPA** • Ciudad Municipal, Cerro Colorado; 16°19'30"S, 071°35'17"W; 26.IV.2020; 2,630 m a.s.l.; Paul Colque obs.; photograph only; 1♀ • Parque Libertad de Expresión, Umacollo; 16°24'13"S, 071°32'55"W; 08.II.2020; 2,311 m a.s.l.; cstobie obs.; photograph only; 1♀ • Arrayanes, Arequipa; 16°19'30"S, 071°33'05"W; 05.VI.2018; 2,295 m a.s.l.; cstobie obs.; photograph only; 1♀ • Tintaya; 16°25'45"S, 071°33'33"W; 02.V.2021; 2,227 m a.s.l.; Sergio Lazo obs.; photograph only; 1♀ – **MOQUEGUA** • Parque Turístico Mirador Cristo Blanco; 17°11'55"S, 070°55'48"W; 26.XII.2021; 1,525 m a.s.l.; Rossy Velarde obs.; photograph only; 1♂ – **TACNA** • Ovalo Pocollay; 17°59'54"S, 070°13'31"W; 28.IV.2024; 651 m a.s.l.; jcarloz302 obs.; photograph only; 1♂ – **BOLIVIA** – **LA PAZ** • Villa Elisa, road 2, Sorata; 15°46'08"S, 068°39'01"W; 25.III.2024; 2,702 m a.s.l.; Linda Fraikin obs.; photograph only; 1♀ • Pura Pura, La Paz; 16°28'55"S, 068°09'21"W; 27.IV.2024; 3,892 m a.s.l.;

Esther Lovera obs.; photograph only; 1♂ • Moxos, La Paz; 16°30'57"S, 068°08'39"W; 29.IV.2024; 3,764 m a.s.l.; Cristina Prudencio obs.; photograph only; 1♂ • Bolognia, La Paz; 16°30'58"S, 068°05'23"W; 19.III.2022; 3,387 m a.s.l.; Omar Miranda obs.; photograph only; 1♀ • Parque Lak a Uta, La Paz; 16°31'08"S, 068°08'37"W; 29.IV.2024; 3,857 m a.s.l.; tadeo3145 obs.; photograph only; 1♂ • road 18, La Paz; 16°31'43"S, 068°04'25"W; 29.IV.2022; 3,372 m a.s.l.; caztor obs.; photograph only; 1♂ • Parque Gimnasio de Achumani, La Paz; 16°31'44"S, 068°04'28"W; 26.IV.2024; 3,375 m a.s.l.; Marcelo Mamani obs.; photograph only; 1♀ • Facultad de Agronomía, Universidad Mayor San Andrés, La Paz; 16°32'11"S, 068°03'53"W; 26.IV.2024; 3,417 m a.s.l.; Vale de Cárdenas obs.; photograph only; 1♂ • road 2, Urbanización Las Retamas, La Paz; 16°32'12"S, 068°05'54"W; 13.IV.2022; 3,319 m a.s.l.; Fabi Rodríguez obs.; photograph only; 1♂ • Plaza Inicio Segunda Meseta, La Paz; 16°32'12"S, 068°05'54"W; 13.IV.2022; 3,319 m a.s.l.; Vale de Cárdenas obs.; photograph only; 1♂ • Herbario Nacional de Bolivia, Cota Cota, La Paz; 16°32'15"S, 068°04'02"W; 29.IV.2019; 3,429 m a.s.l.; Álvaro Garitano obs.; photograph only; 1♀ • Herbario Nacional de Bolivia, Cota Cota, La Paz; 16°32'15"S, 068°04'02"W; 26.IV.2024; 3,429 m a.s.l.; Cami Ramunz obs.; photograph only; 1♂ • Herbario Nacional, Cota Cota, La Paz; 16°32'17"S, 068°04'00"W; 29.IV.2024; 3,439 m a.s.l.; Gustavo Castro obs.; photograph only; 1♀ • Herbario Nacional, Cota Cota, La Paz; 16°32'17"S, 068°04'03"W; 22.IV.2024; 3,439 m a.s.l.; jassiel-tp obs.; photograph only; 1♂ • Herbario Nacional, Cota Cota, La Paz; 16°32'18"S, 068°04'06"W; 29.IV.2024; 3,425 m a.s.l.; Natalie Herrera obs.; photograph only; 1♂ • Ingeniería Geográfica, Universidad Mayor San Andrés, Cota Cota, La Paz; 16°32'16"S, 068°04'09"W; 23.III.2019; 3,414 m a.s.l.; Osnar Ascurinaga obs.; photograph only; 1♀ • Ingeniería Geográfica, Universidad Mayor San Andrés, Cota Cota, La Paz; 16°32'16"S, 068°04'09"W; 17.III.2022; 3,396 m a.s.l.; Vale de Cárdenas obs.; photograph only; 1♂ • Jardín Botánico, Cota Cota, La Paz; 16°32'19"S, 068°04'09"W; 05.V.2024; 3,394 m a.s.l.; Valdimar Vallejos obs.; photograph only; 1♂ • Jardín Botánico, Cota Cota, La Paz; 16°32'21"S, 068°04'07"W; 22.V.2024; 3,394 m a.s.l.; Rena España obs.; photograph only; 1♂ • Ingeniería Mecánica, Universidad Mayor San Andrés, Cota Cota, La Paz; 16°32'20"S, 068°03'40"W; 27.IV.2024; 3,461 m a.s.l.; eleastetmontes obs.; photograph only; 1♂ • Calle 26A, Cota Cota, La Paz; 16°32'20"S, 068°03'40"W; 02.V.2022; 3,461 m a.s.l.; Álvaro Garitano obs.; photograph only; 1♂ • Los Pinos Norte, La Paz; 16°32'30"S, 068°04'31"W; 27.IV.2020; 3,345 m a.s.l.; Álvaro Thompson obs.; photograph only; 1♀ • Parque La Florida, La Paz; 16°32'41"S, 068°05'31"W; 29.IV.2019; 3,228 m a.s.l.; Ángeles Kimi obs.; photograph only; 1♂ • Alto Florida, La Paz; 16°32'50"S, 068°05'09"W; 29.IV.2019; 3,296 m a.s.l.; Jorge Calvet obs.; photograph only; 1♂ – **COCHABAMBA** • Parque Metropolitano Arocagua; 17°22'02"S, 066°06'23"W; 29.IV.2019; 2,746 m a.s.l.; Víctor García-Soliz obs.; photograph only; 1♂ • Jayhuayco; 17°25'41"S, 066°09'18"W; 02.X.2018; 2,564 m a.s.l.; José Balderrama obs.; photograph only; 1♂ • Plaza Central San Juan Bosco, Jayhuayco; 17°26'03"S, 066°09'26"W; 11.IV.2021; 2,556 m a.s.l.; Alex Cornejo obs.; photograph only; 1♂ – **CHUQUISACA** • Quila Quila, Sucre; 19°09'29"S, 065°23'26"W; IV.2020; 2,901 m a.s.l.; eldirko obs.; photograph only; 1♂ – **URUGUAY** – **SALTO** • Villa España, Salto; 31°22'45"S, 057°57'33"W; 23.X.2021; 30 m a.s.l.; Javier Piquillen obs.; photograph only; 1♀ – **TACUAREMBÓ** • Larranaga avenue, Tacuarembó; 31°43'15"S, 055°58'52"W; 15.IX.2022; 134 m a.s.l.; Leticia Mora obs.; photograph only; 1♂ – **CERRO LARGO** • Bioparque, Melo; 32°21'58"S, 054°11'19"W; 23.I.2023; 106 m a.s.l.; Luis Vescia obs.; photograph only; 2♀ • Bioparque, Melo; 32°22'05"S, 054°11'14"W; 10.I.2017; 101 m a.s.l.; Luis Vescia obs.; photograph only; 1♀ • Tacuari road, Melo; 32°22'35"S, 054°09'47"W; 26.XII.2020; 115 m a.s.l.; Sebastián de Los Ángeles obs.; photograph only; 1♂ – **RÍO NEGRO** • sector 3, San Javier; 32°31'42"S, 058°02'15"W; 21.XII.2021; 15 m a.s.l.; Santiago Mailhos obs.; photograph only; 1♂ • San Javier; 32°31'44"S, 058°02'18"W; 11.I.2024; 15 m a.s.l.; Santiago Mailhos obs.; photograph only; 1♀ – **SORIANO** • 19 de Abril, sección 1, Mercedes; 33°15'03"S, 058°02'13"W; 29.IV.2021; 17 m a.s.l.; Tiana Leiva obs.; photograph only; 1♂ • 33 road, Mercedes; 33°15'03"S, 058°01'23"W; 25.VIII.2019; 41 m a.s.l.; Joselin Listur obs.; photograph only; 1♀ – **ROCHA** • Capacho; 33°53'59"S, 053°31'50"W; 03.I.2019; 5 m a.s.l.; mirmeleon obs.; photograph only; 1♂ – **CANELONES** • Ruta 74 Y, km 32.800; 34°42'54"S, 056°03'09"W; 28.VIII.2023; 67 m a.s.l.; Franco Agustín Toso obs.; photograph only; 1♀ • Atlántida; 34°46'48"S, 055°45'20"W; 18.VII.2024; 67 m a.s.l.; Fiorella Revello obs.; photograph only; 1♂ • Atlántida; 34°46'48"S, 055°45'20"W; 18.VII.2024; 7 m a.s.l.; Fiorela Revello obs.; photograph only; 1♂ • Río Negro, Salinas; 34°46'39"S, 055°49'47"W; 26.IX.2022; 21 m a.s.l.; Agustina Medina obs.; photograph only; 1♂ • Neptunia; 34°46'47"S, 055°53'11"W; 24.IX.2023; 18 m a.s.l.; Julieta López obs.; photograph only; 1♂ • Paralela Norte Interbalnearia; 34°47'25"S, 055°55'56"W; 08.XII.2014; 21 m a.s.l.; Mauricio Silvera obs.; photograph only; 1♂ • Paralela Norte Interbalnearia; 34°47'25"S, 055°55'56"W; 27.XII.2018; 21 m a.s.l.; Mauricio Silvera obs.; photograph only; 1♂ • El Pinar; 34°47'52"S, 055°54'14"W; 26.IX.2022; 18 m a.s.l.; Santiago Ramos obs.; photograph only; 1♀ • Carrasco International Airport, Ciudad de la Costa; 34°49'38"S, 056°01'27"W; 01.V.2018; 19 m a.s.l.; Gustavo Casás obs.; photograph only; 1♀ • Niza road, El Bosque; 34°50'15"S, 055°58'05"W; 20.XI.2020; 7 m a.s.l.; anainesgp obs.; photograph only; 1♂ – **MONTEVIDEO** • Paso Las Duranas; 34°50'57"S, 056°11'49"W; 20.VIII.2023; 17 m a.s.l.; Pablo G. Fernández obs.; photograph only; 1♂ • Pérez Castellanos, Montevideo; 34°51'29"S, 056°09'25"W; 19.I.2019; 43 m a.s.l.; Pablo Balduvino obs.; photograph only; 1♂ • Jardín Botánico de Montevideo; 34°51'34"S, 056°12'03"W; 25.II.2019; 18 m a.s.l.; Joaquín Dávila obs.; photograph only; 1♂ • Plaza 12, Brazo Oriental, Montevideo; 34°51'58"S, 056°10'41"W; 01.I.2024; 12 m a.s.l.; mikcuparo obs.; photograph only; 1♀ • Parque Rivera, Montevideo; 34°52'46"S, 056°05'31"W; 11.XII.2022; 34 m a.s.l.; Pablo Balduvino obs.; photograph only; 1♀ • La

Comercial, Montevideo; 34°53'06"S, 056°09'59"W; 12.II.2023; 45 m a.s.l.; Gabriel Gancharov obs.; photograph only; 1♂ • Malvín, Montevideo; 34°53'06"S, 056°06'45"W; 13.XII.2021; 24 m a.s.l.; Lucía Rodríguez-Tricot obs.; photograph only; 1♂ • Tomás Gómez road, Parque Batlle, Montevideo; 34°53'30"S, 056°08'04"W; 02.IV.2020; 32 m a.s.l.; Andrés Costa obs.; photograph only; 1♀ • Pilcomayo road, Montevideo; 34°53'37"S, 056°05'41"W; 10.I.2021; 8 m a.s.l.; Sebastián Mántaras obs.; photograph only; 1♀ • Cordón, Montevideo; 34°54'19"S, 056°11'06"W; 27.VI.2024; 42 m a.s.l.; yalona obs.; photograph only; 1♀ • CHILE – **ARICA** • Surire, Pampa Algodonal, Azapa Valley; 18°35'22"S, 069°49'26"W; 1,218 m a.s.l.; 25.IV.2024; R. Barahona-Segovia leg.; caught by hand; 1♀, SYR0027/MZULA • Sobraya, Azapa Valley; 18°35'06"S, 070°02'35"W; 591 m a.s.l.; 28.IV.2024; R. Barahona-Segovia obs.; 2♀ – **IQUIQUE** • Iquique, Cavancha beach; 20°13'46"S, 070°08'49"W; 10 m a.s.l.; 16.X.2017; R. Barahona-Segovia leg.; 1♂ SYR011/RBSPC – **PICA** • Pica town; 20°29'01"S, 069°19'10"W; 1,390 m a.s.l.; 17.X.2022; Michael Weymann obs.; photograph only; 1♂ – **SIERRA GORDA** • Baquedano; 23°20'00"S, 069°50'32"W; 1,032 m a.s.l.; 06.III.2022; Juan Mauricio Contreras obs.; photograph only; 1♀ – **ANTOFAGASTA** • Uribe, Antofagasta; 23°33'31"S, 070°14'12"W; 587 m a.s.l.; 12.II.2024; Adrián Trigos obs.; photograph only; 1♀ • Angamos avenue, South of Antofagasta; 23°41'48"S, 070°24'51"W; 48 m a.s.l.; 31.V.2020; Juan Mauricio Contreras obs.; photograph only; 1♀ • Puerto Montt Road, Antofagasta city; 23°27'39"S, 070°23'05"W; 61 m a.s.l.; 13.VII.2022; Rodrigo Castillo obs.; photograph only; 1♂ • Fosfoquim S.A., Antofagasta city; 23°38'14"S, 070°17'24"W; 519 m a.s.l.; 20.IV.2023; Rodrigo Castillo obs.; photograph only; 1♂ • Antofagasta city; [23°37'59"S, 070°23'18"W]; 50 m a.s.l.; 29.IV.2020; Juan Ignacio Barrientos Muñoz obs.; photograph only; 1♂ • Taltal; 25°24'31"S, 070°29'04"W; 45 m a.s.l.; 29.VI.2016; Alejandra Ortega Saavedra obs.; photograph only; 1♀ • Taltal; 25°24'31"S, 070°29'04"W; 45 m a.s.l.; 10.V.2017; Alejandra Ortega Saavedra obs.; photograph only; 1♀, 1♂ – **COPIAPÓ** • El Palomar Park, Copiapó; 27°23'03"S, 070°20'03"W; 395 m a.s.l.; 08.V.2017; Pedro Vargas obs.; photograph only; 1♂ • Cerro Pedro León Gallo; 27°21'20"S, 070°18'10"W; 472 m a.s.l.; 15.II.2018; Luis Gatica obs.; photograph only; 1♂ – **VALLENAR** • Maitencillo, Vallenar; 28°31'44"S, 070°55'31"W; 589 m a.s.l.; 15.X.2019; Juan Enrique Alegría obs.; photograph only; 1♂ • Road to Hacienda Ventanas, Vallenar; 28°34'08"S, 070°47'16"W; 368 m a.s.l.; 10.IV.2020; Joan Cotín Betand obs.; photograph only; 1♂ • Chañaral de Aceituno; 29°04'39"S, 071°29'28"W; 6 m a.s.l.; 15.IV.2022; Jonathan González obs.; photograph only; 1♂ – **ELQUI** • Yervas Buenas, La Higuera, 29°34'20"S, 071°18'02"W; 158 m a.s.l.; 14.IV.2024; Daniel Ape obs.; 1♂ • Yervas Buenas, La Higuera, 29°34'21"S, 071°18'02"W; 164 m a.s.l.; 03.V.2024; Daniel Ape obs.; 1♂ – **LIMARÍ** • La Serena; 29°51'15"S, 071°11'57"W; 387 m a.s.l.; 20.IV.2021; Lorenzo Vega obs.; photograph only; 1♂ • La Serena; 29°54'09"S, 071°15'06"W; 25 m a.s.l.; 12.V.2021; Franco Carrimana obs.; photograph only; 1♀ • Juan de Dios Pení road, intersection with av. Balmaceda; 29°54'09"S, 071°15'06"W; 25 m a.s.l.; 12.V.2021; Franco Carrimana obs.; photograph only; 1♀ • El Litre road, intersection with Av. Arauco; 29°54'28"S, 071°14'59"W; 27 m a.s.l.; 12.V.2021; Samuel Oak obs.; photograph only; 1♀ • La Serena; 29°54'09"S, 071°15'06"W; 25 m a.s.l.; 10.V.2021; Franco Carrimana obs.; photograph only; 1♂ • Universidad de La Serena, Campus Andrés Bello; 29°54'42"S, 071°14'29"W; 76 m a.s.l.; 27.XI.2023; Brayan Araya obs.; photograph only; 1♂ • Cancha El Canelo, Barrio Inglés, Coquimbo; 29°56'24"S, 071°20'46"W; 66 m a.s.l.; 27.II.2021; Scarlleth Cubillos obs.; photograph only; 1♀ • Facultad de Medicina, Universidad Católica del Norte, Coquimbo; 29°57'55"S, 071°21'04"W; 14 m a.s.l.; 27.IX.2023; Bastián Riveros obs.; photograph only; 1♀ • Viña Tabalí, Hacienda Sta. Rosa; 30°40'55"S, 071°22'53"W; 230 m a.s.l.; 05.IV.2017; Aníbal Gómez obs.; photograph only; 1♀ – **CHOAPA** • Chuchiñí; 31°45'23"S, 071°03'04"W; 424 m a.s.l.; 06.II.2020; Matías Cortés Carvajal obs.; photograph only; 1♀ • Salamanca; 31°46'51"S, 070°58'11"W; 1127 m a.s.l.; 29.IV.2024; Wayman Kong obs.; photograph only; 1♂ – **PETORCA** • Parque Urbano La Ligua, La Ligua; 32°27'41"S, 071°13'36"W; 183 m a.s.l.; 21.III.2020; César Martínez obs.; photograph only; 1♂ • same locality; 32°27'41"S, 071°13'36"W; 183 m a.s.l.; 06.XII.2020; César Martínez obs.; photograph only; 1♂ • Putaendo; 32°37'41"S, 070°43'05"W; 816 m a.s.l.; 24.IV.2021; Patrick Vyvyan obs.; photograph only; 1♀ – **LOS ANDES** • El Estero, Calle Larga; 32°51'20"S, 070°37'41"W; 780 m a.s.l.; 28.III.2020; Bárbara Jofre obs.; photograph only; 1♀ – **SAN FELIPE DE ACONCAGUA** • San Roque, Catemu; 32°46'26"S, 070°56'01"W; 430 m a.s.l.; 01.V.2018; Ángel Cisternas obs.; photograph only; 1♀ – **VALPARAÍSO** • Alonso de Quintero road, Quintero; 32°46'59"S, 071°31'43"W; 12 m a.s.l.; 05.IV.2022; Michelle Poblete obs.; photograph only; 1♀ • Quintero; 32°46'54"S, 071°31'59"W; 12 m a.s.l.; 11.II.2020; Christian Peña obs.; photograph only; 1♀ • Cerro El Mauco; 32°53'22"S, 071°25'33"W; 624 m a.s.l.; 1.II.2020; Pedro Romann Garay obs.; photograph only; 1♂ • El Prado with La Santa María road, Concón; 32°55'59"S, 071°32'12"W; 62 m a.s.l.; 29.IV.2017; Diego Aguayo obs.; photograph only; 1♀ • Subida Padre Hurtado, Viña del Mar; 33°00'54"S, 071°32'57"W; 17 m a.s.l.; 27.XII.2017; Catherine Javiera Paz obs.; photograph only; 1♂ • Recreo, Viña del Mar; 33°01'49"S, 071°34'14"W; 80 m a.s.l.; 26.V.2017; Vicente Carrasco obs.; photograph only; 1♂ • Jardín Botánico de Viña del Mar; 33°02'55"S, 071°29'58"W; 51 m a.s.l.; 18.III.2015; Pedro Vargas obs.; photograph only; 1♀ – **QUILLOTA** • Villa Las Araucarias, Quillota; 32°53'08"S, 071°14'52"W; 127 m a.s.l.; 14.VI.2018; Nani Toledo obs.; photograph only; 1♂ • DUOC Quillota; 33°55'29"S, 071°17'17"W; 91 m a.s.l.; 09.V.2017; Ariel Mena obs.; photograph only; 1♀ • Rautén; 33°52'59"S, 071°18'54"W; 93 m a.s.l.; 09.XII.2017; Gabriela Germain Fonck obs.; photograph only; 1♂ – **MARGA MARGA** • Florencia road, Quilpué; 33°02'19"S, 071°26'13"W; 117 m a.s.l.; 07.III.2023; Gabriela Germain Fonck obs.; photograph only; 1♀ • Eleuterio Ramírez road, Quilpué; 33°02'28"S, 071°06'00"W; 185 m a.s.l.; 13.IV.2022; Gabriela Germain Fonck obs.; photograph only; 1♀ • Parque Natural Cerro Los Pinos; 33°04'34"S, 071°25'32"W; 185

m a.s.l.; 25.II.2020; Matías Saa obs.; photograph only; 1♂ • Villa Alemana; 33°02'29"S, 071°22'40"W; 150 m a.s.l.; 03.V.2020; Rafael Arroyo obs.; photograph only; 1♂ • Peñablanca; 33°03'08"S, 071°19'44"W; 232 m a.s.l.; 17.XI.2016; Alejandro Vera obs.; photograph only; 1♂ – **SAN ANTONIO** • Lomas Verdes; 33°23'59"S, 071°32'47"W; 249 m a.s.l.; 04.VIII.2022; tic-tic obs.; photograph only; 1♂ • San Antonio; 33°35'05"S, 071°46'31"W; 64 m a.s.l.; 04.III.2017; Tabatha Carrera obs.; photograph only; 1♂ – **CHACABUCO** • Parque Quilapilún, Colina; 33°05'33"S, 070°43'59"W; 619 m a.s.l.; 01.II.2020; Aluc Ynógeno obs.; photograph only; 1♂ • Batuco, Lampa; 33°13'46"S, 070°48'38"W; 488 m a.s.l.; 03.XI.2018; Carolina Bertins obs.; photograph only; 1♂ • Chicauma; 33°14'12"S, 070°56'18"W; 586 m a.s.l.; 20.III.2021; Leonardo Rodríguez obs.; photograph only; 1♂ • Chicureo; 33°18'27"S, 070°39'25"W; 552 m a.s.l.; 16.IV.2020; Valentina Herrera obs.; photograph only; 1♀ – **SANTIAGO** • Sta Paula road, Quilicura; 33°21'45"S, 070°42'41"W; 490 m a.s.l.; 17.II.2021; Victoria Kunts obs.; photograph only; 1♀ • same locality; 33°21'45"S, 070°42'41"W; 490 m a.s.l.; 26.III.2021; Victoria Kunts obs.; photograph only; 1♀ • Línea Ferrea; 33°21'48"S, 070°42'24"W; 492 m a.s.l.; 22.XII.2019; Victoria Kunts obs.; photograph only; 1♀ • Altos de Quilicura; 33°21'45"S, 070°42'41"W; 492 m a.s.l.; 22.V.2020; Ehriel Aguilera obs.; photograph only; 1♀ • Huechuraba; 33°21'32"S, 070°41'22"W; 492 m a.s.l.; 13.I.2018; Javiera Rocca obs.; photograph only; 1♀ • Cooperativa road, Recoleta; 33°22'53"S, 070°38'52"W; 510 m a.s.l.; 30.IV.2019; Susana Delgado obs.; photograph only; 2♂ • Conchalí; 33°21'45"S, 070°42'41"W; 521 m a.s.l.; 22.V.2020; Fernanda Ambar obs.; photograph only; 1♀ • Ingeniero Álvarez Albornoz, Vitacura; 33°23'17"S, 070°34'18"W; 698 m a.s.l.; 25.XII.2023; Akrebs88 obs.; photograph only; 1♂ • Club Palestino, Las Condes; 33°23'19"S, 070°32'34"W; 746 m a.s.l.; 10.I.2017; Andrés Moreira obs.; photograph only; 1♀ • Metro Dorsal; 33°23'49"S, 070°38'37"W; 522 m a.s.l.; 02.III.2022; Benjamín Silva Ahumada obs.; photograph only; 1♀ • Kidzania, Las Condes; 33°24'11"S, 070°34'31"W; 680 m a.s.l.; 23.II.2018; Juan Lillo obs.; photograph only; 1♂ • Cerro San Cristóbal; 33°24'05"S, 070°36'35"W; 731 m a.s.l.; 10.II.2018; Orlando Montés obs.; photograph only; 1♂ • same locality; 33°25'00"S, 070°37'25"W; 789 m a.s.l.; 03.IV.2016; Orlando Montés obs.; photograph only; 1♀ • Independencia; 33°24'48"S, 070°39'59"W; 789 m a.s.l.; 03.IV.2016; Rodrigo Barahona obs.; photograph only; 1♀ • Parque Bicentenario, Vitacura; 33°23'55"S, 070°36'09"W; 646 m a.s.l.; 25.III.2018; Matías Cortés Carvajal obs.; photograph only; 1♂ • Cerro San Cristóbal; 33°25'00"S, 070°37'25"W; 789 m a.s.l.; 03.IV.2016; Orlando Montés obs.; photograph only; 1♀ • Costanera Andrés Bello, Providencia; 33°25'21"S, 070°37'01"W; 590 m a.s.l.; 08.VI.2016; Gabriela Germain Fonck obs.; photograph only; 1♀ • Quinta Normal; 33°25'54"S, 070°41'33"W; 498 m a.s.l.; 08.V.2016; Claudio Guzmán Retamales obs.; photograph only; 1♀ • Las Luciérnagas road, La Reina; 33°26'02"S, 070°34'38"W; 632 m a.s.l.; 22.X.2016; Gabriela Germain Fonck obs.; photograph only; 1♀ • Parque Aguas de Ramón, Las Condes; 33°26'03"S, 070°30'12"W; 829 m a.s.l.; 17.II.2022; Orlando Montés obs.; photograph only; 1♂ • Marchant Pereira road, Providencia; 33°26'16"S, 070°36'36"W; 589 m a.s.l.; 12.III.2021; Gabriela Germain Fonck obs.; photograph only; 1♂ • Parque Inés de Suarez, Providencia; 33°26'22"S, 070°34'38"W; 589 m a.s.l.; 13.X.2019; Gabriela Germain Fonck obs.; photograph only; 1♀ • Plaza Pedro de Valdivia, Providencia; 33°26'23"S, 070°26'36"W; 597 m a.s.l.; 18.II.2021; Gabriela Germain Fonck obs.; photograph only; 1♂ • Providencia; [33°26'23"S, 070°26'36"W]; 586 m a.s.l.; 08.VI.2020; Gabriela Germain Fonck obs.; photograph only; 1♀ • Lastarria, Santiago; 33°26'25"S, 070°38'35"W; 571 m a.s.l.; 03.I.2020; Jens Bockelaar obs.; photograph only; 1 sex indeterminate • Pudahuel; [33°26'32"S, 070°45'51"W]; 496 m a.s.l.; 01.X.2015; Robin Guerrero obs.; photograph only; 1♂ • Atacama road, Pudahuel; 33°26'45"S, 070°45'03"W; 484 m a.s.l.; 05.III.2020; Abigail Monavi Bigi obs.; photograph only; 1♂ • South Pudahuel; 33°26'51"S, 070°45'31"W; 503 m a.s.l.; 24.I.2020; Jonathan Zavala obs.; photograph only; 1♀ • Cóndor road with Arturo Prat, Santiago; 33°27'01"S, 070°38'57"W; 551 m a.s.l.; 24.I.2020; Victor Tapia obs.; photograph only; 1 sex indet. • José Manuel Infante road with Irarrázabal avenue; 33°27'01"S, 070°37'02"W; 574 m a.s.l.; 23.I.2022; Kathy Zenteno obs.; photograph only; 1♂ • Estación Central; [33°27'54"S, 070°42'06"W]; 503 m a.s.l.; 05.II.2020; Alexis Cáceres obs.; photograph only; 1♂ • Metro Grecia, Peñalolén; 33°28'15"S, 070°34'25"W; 598 m a.s.l.; 06.IV.2018; Doris Pinto obs.; photograph only; 1♂ • San Miguel; [33°29'25"S, 070°39'19"W]; 542 m a.s.l.; 03.IX.2019; Juan Andrés obs.; photograph only; 1♂ • San Miguel; [33°29'28"S, 070°39'07"W]; 541 m a.s.l.; 14.I.2020; Gerardo Cortés obs.; photograph only; 1♀ • Metro Station Santiago Bueras, Maipú; 33°29'43"S, 070°45'25"W; 551 m a.s.l.; 16.IV.2017; Martín Álvarez obs.; photograph only; 1♀ • Plaza Madeco Vieja; 33°30'00"S, 070°38'43"W; 553 m a.s.l.; 05.IV.2021; Nicolás Villaseca obs.; photograph only; 1♀ • Departamental with Vicuña Mackenna avenue; 33°30'31"S, 070°36'48"W; 579 m a.s.l.; 27.XI.2018; Rolando Salinas obs.; photograph only; 1♂ • Maipú; 33°30'37"S, 070°45'59"W; 480 m a.s.l.; 08.V.2019; Chais Nuis obs.; photograph only; 1♂ • Alto Macul, La Florida; 33°30'44"S, 070°31'41"W; 736 m a.s.l.; 17.II.2021; Victor Jesam obs.; photograph only; 1♀ • Ferrocarril, Maipú; 33°30'45"S, 070°44'29"W; 480 m a.s.l.; 06.III.2016; Pablo Moreno obs.; photograph only; 1♀ • Paradero 11, Vicuña Mackenna avenue; 33°30'58"S, 070°36'08"W; 584 m a.s.l.; 13.V.2020; Rodrigo Campillay Jerez obs.; photograph only; 1♂ • Presidente Salvador Allende Gossens road; 33°31'00"S, 070°41'04"W; 541 m a.s.l.; 12.I.2023; Peter Peterson obs.; photograph only; 1♀ • Panul Forest; 33°31'04"S, 070°32'41"W; 893 m a.s.l.; 25.III.2016; Camila Gherardi obs.; photograph only; 1♂ • Walker Martínez road, La Florida; [33°31'04"S, 070°34'32"W]; 893 m a.s.l.; 07.XII.2017; Gabriela Germain Fonck obs.; photograph only; 1♀ • Lo Espejo; 33°31'16"S, 070°41'25"W; 537 m a.s.l.; 25.II.2021; Cecilia Lorca obs.; photograph only; 1♂ • Santuario Nacional de Schoenstatt, La Florida; 33°31'26"S, 070°35'29"W; 602 m a.s.l.; 01.I.2018;

Constanza Pérez obs.; photograph only; 1♂ • La Florida; [33°31'39"S, 070°35'34"W]; 602 m a.s.l.; 18.I.2017; Tinoman Fernández obs.; photograph only; 1♂ • same locality; [33°31'39"S, 070°35'34"W]; 602 m a.s.l.; 14.VIII.2018; Daniela Jimenez obs.; photograph only; 1♂ • South Vespucio with South 5-highway; 33°31'50"S, 070°40'54"W; 549 m a.s.l.; 07.I.2020; Carlos Domínguez obs.; photograph only; 1♀ • Plaza Doctor Diego Whittaker; 33°31'50"S, 070°39'30"W; 569 m a.s.l.; 20.V.2018; Ariel Cabrera obs.; photograph only; 1♂ • Tito Mundt with Miguel Rubio roads, Maipú; 33°31'53"S, 070°46'17"W; 473 m a.s.l.; 05.XI.2017; Pablo Moreno obs.; photograph only; 1♀ • Villa Los Héroes, Maipú; 33°31'55"S, 070°46'10"W; 461 m a.s.l.; 09.III.2017; Pablo Moreno obs.; photograph only; 1♀ • Rojas Magallanes with Ecuador roads; 33°32'09"S, 070°34'57"W; 461 m a.s.l.; 29.III.2021; Cristian Mendez obs.; photograph only; 1♀ • Villa Las Gardenias; 33°32'41"S, 070°36'23"W; 617 m a.s.l.; 19.V.2022; Ariel Cabrera obs.; photograph only; 1♂ • El Bosque; 33°33'02"S, 070°40'44"W; 576 m a.s.l.; 01.IV.2021; Cristian Trejos obs.; photograph only; 1♀ • Almirante Riveros with Uno Sur roads, El Bosque; 33°33'10"S, 070°39'25"W; 586 m a.s.l.; 19.IX.2020; Diego Gutiérrez obs.; photograph only; 1♂ • Alejandro Guzmán with Los Morros road, El Bosque; 33°33'36"S, 070°40'11"W; 578 m a.s.l.; 25.V.2020; Christopher Jara obs.; photograph only; 1♂ • Los Quillayes; 33°33'45"S, 070°35'43"W; 648 m a.s.l.; 31.I.2021; Javier Navarro obs.; photograph only; 1♀ – **CORDILLERA** • Río Cholguaco with Lago Todos Los Santos road, Puente Alto; 33°37'06"S, 070°33'37"W; 680 m a.s.l.; 23.II.2018; Cecilia Moreno obs.; photograph only; 1♂ • Puente Alto; 33°37'06"S, 070°35'26"W; 697 m a.s.l.; 28.V.2015; Rodrigo Barahona-Segovia obs.; photograph only; 1♂ • Pirque; 33°38'33"S, 070°33'25"W; 731 m a.s.l.; 15.IV.2020; Gabriela Anríquez obs.; photograph only; 1♀ • Pirque; 33°42'02"S, 070°33'46"W; 731 m a.s.l.; 14.III.2021; Francisca Farías obs.; photograph only; 1♂ • Nos; 33°38'28"S, 070°42'09"W; 567 m a.s.l.; 05.II.2023; Daniel 3031 obs.; photograph only; 1♀ – **TALAGANTE** • El Monte; [33°41'56"S, 070°45'25"W]; 298 m a.s.l.; 25.III.2021; Claudio Arancibia obs.; photograph only; 1♀ – **MELIPILLA** • Baracaldo, María Pinto; 33°31'24"S, 071°08'33"W; 158 m a.s.l.; 28.02.2021; Jennifer Carrera obs.; photograph only; 1♂ – **MAIPO** • San Bernardo; [33°35'26"S, 070°42'05"W]; 561 m a.s.l.; 17.II.2021; Loreynat obs.; photograph only; 1♂ • Calera de Tango; [33°41'35"S, 071°01'25"W]; 497 m a.s.l.; 25.III.2021; Maureen Little obs.; photograph only; 1♀ • Parque Puente Río Maipo; 33°41'35"S, 070°43'25"W; 509 m a.s.l.; 07.III.2021; José Ignacio Cabezas Martínez obs.; photograph only; 1♂ • Maipo; 33°42'50"S, 070°45'29"W; 477 m a.s.l.; 07.III.2021; José Ignacio Cabezas Martínez obs.; photograph only; 1♀ • Buin; [33°43'03"S, 070°44'31"W]; 482 m a.s.l.; 20.IV.2019; Catalina Espinoza obs.; photograph only; 1♂ • Condominio El Alto, Linderos; 33°45'11"S, 070°44'23"W; 456 m a.s.l.; 02.VII.2022; Norianaabs obs.; photograph only; 1♂ • Hospital; 33°51'33"S, 070°44'05"W; 373 m a.s.l.; 23.III.2018; Orlando Montes obs.; photograph only; 1♀ – **CACHAPOAL** • San Rafael road intersection with Salto del Laja, Rancagua; 34°09'20"S, 070°45'11"W; 480 m a.s.l.; 14.III.2021; Walter Galaz obs.; photograph only; 1♂ • Machalí; 34°10'53"S, 070°39'04"W; 558 m a.s.l.; VII.2019; Esteban Gómez obs.; photograph only; 1♂ • Codao, Peumo; 34°21'00"S, 071°13'59"W; 182 m a.s.l.; 21.IV.2016; Felipe Molina obs.; photograph only; 1♀ • Peumo; 34°23'36"S, 071°10'07"W; 186 m a.s.l.; 14.VIII.2020; Pablo Núñez obs.; photograph only; 1♀ • Los Rastrojos, San Vicente de Tagua Tagua; 34°28'02"S, 071°01'18"W; 231 m a.s.l.; 30.I.2024; Catalina Chappuzeau obs.; photograph only; 1♀ • Pelequén Viejo, Malloa; 34°27'01"S, 070°53'39"W; 271 m a.s.l.; 15.IV.2017; Diego Meza obs.; photograph only; 1♀ • Pelequén Viejo, Malloa; 34°27'01"S, 070°53'39"W; 271 m a.s.l.; 12.II.2018; Diego Meza obs.; photograph only; 1♀ – **CARDENAL CARO** • Marchigüe; 34°23'49"S, 071°37'14"W; 142 m a.s.l.; 16.I.2022; Catalina Pérez obs.; photograph only; 1♂ – **COLCHAGUA** • Chimbarongo; 34°42'30"S, 071°01'44"W; 314 m a.s.l.; 01.V.2018; Jonathan Zavala obs.; photograph only; 1♀ – **TALCA** • Botanical Garden of the Universidad de Talca, Talca; 35°24'20"S, 071°37'56"W; 113 m a.s.l.; 05.III.2022; Aníbal Gómez obs.; photograph only; 1♀ • Talca; 35°25'23"S, 071°38'54"W; 119 m a.s.l.; 22.II.2023; Fabián EGL obs.; photograph only; 1♀ • Cerrillo Caivan, Talca; 35°29'16"S, 071°39'51"W; 128 m a.s.l.; 01.II.2022; Ani Mari obs.; photograph only; 1♀, 1♂.

Other specimens. CHILE – **VALPARAÍSO** • Quilpué, población Los Pinos junto a carretera Troncal Sur; 13.I.2015; Asiel Olivares Leg.; 1♀; MNHNCL without voucher – **SANTIAGO** • Zapadores avenue with Huasco road, Recoleta, Santiago; 27.II.2016; Rodrigo Barahona-Segovia Leg.; 1♂, PCRBS 0012 • Cementerio General de Santiago, 28.VII.2016, Rodrigo Barahona-Segovia Leg.; 1♂, PCRBS 0013 • Ñuñoa, Campus Juan Gómez Millas, Santiago; 30.V.2015; Rodrigo Barahona-Segovia Leg.; 1♀, PCRBS 0014 • La Florida; 18.I.2017; Jaime Ramírez Leg.; 1♂, LEAF without voucher – **CORDILLERA** • Puente Alto; 24.XI.2015; Rodrigo Barahona-Segovia Leg.; 1♂, PCRBS 0015.

Identification. *Eristalinus taeniops* can be easily identified from other Eristalinae (for example, *Palpada* Macquart, 1854) in the New World by having eyes with five or more slender bands (Figure 1A–D). The yellowish-gray scutum has four dusted (or dull), blackish, longitudinal vittae (Figure 1A–F). The abdominal pattern is sometimes variable, with the 2nd, 3rd, and 4th terga having a complete yellowish band of varying size (Figure 1C, D). Sometimes, the 2nd tergum has a vertical black vitta forming two yellowish maculae (Figure 1E, F). The 2nd tergum has the yellowish vitta wider than those of the 3rd and 4th terga (Figure 1C, D). The slightly yellowish band on tergum 4th is very thin and curved, or absent (Figure 1D, E). A key to *Eristalinus* species is provided by Smit et al. (2017).

Biological notes and remarks for Chilean records. *Eristalinus taeniops* has been recorded visiting a great number of plant species, with 135 records belonging to 43 taxa from 16 different families. The plant

family with the most records was Asteraceae (53%, $n = 87$), only followed by Araliaceae (7%, $n = 9$). Within Asteraceae, around 63% of the interactions were with undetermined Asteraceae taxa (probably herbs/shrubs) ($n = 21$), followed by native *Baccharis* L. species such as *Baccharis linearis* (Ruiz & Pav.) Pers. and *Baccharis paniculata* DC ($n = 16$), *Euryops pectinatus* (L.) Cass. ($n = 14$), and introduced *Senecio angulatus* L.F., *Senecio viravira* Hieron., and *Senecio vulgaris* L. ($n = 13$) Other common Asteraceae found in the interactions were *Calendula* L. ($n = 7$), the complex *Hypochaeris/Taraxacum* ($n = 5$), and *Zinnia elegans* Jacq. ($n = 3$). Most of the Araliaceae interactions were with *Hedera helix* L. ($n = 8$) with one record on *Panax japonicus* C.A. Meyer. The other families gather 40% of the interactions and belong to Adoxaceae (*Viburnum tinus* L.), Apiaceae (*Conium maculatum* L.), Brassicaceae (*Lobularia maritima* (L.) Desv. and *Sisymbrium* L.), Celastraceae (*Euonymus japonicus* Thunb.), Crassulaceae (*Crassula* L.), Euphorbiaceae (*Euphorbia* L.), Fabaceae (*Medicago* L., *Prosopis* L., *Vachelia caven* (Molina) Seigler & Ebinger), Lamiaceae (*Mentha piperita* L.), Phytolacaceae (*Phytolacca dioica* L.), Quillajaceae (*Quillaja Saponaria* Molina), Rhamnaceae (*Phyllica ericoides* L.), Rosaceae (*Pyracantha* M. Roem. and *Rosa* L.), Schrophulariaceae (*Buddleja* L., *Myoporum* Banks & Sol. ex G. Forst., and *Hebe buxifolia* ((Benth.) Cockayne & Allan) and Verbenaceae (*Aloysia citrodora* Paláu). Finally, of all 43 taxa recorded, 78% were introduced ($n = 33$) representing 81% of the records, and 22% were native ($n = 10$), representing only 19% of the records.

Distribution. Originally from the Old World, *E. taeniops* has been cited for the Mediterranean part of the Palearctic (e.g., Thompson and Rotheray 1998; van Steenis 2015), Africa (e.g., Ssymank et al. 2017; Djellab et al. 2019), Oriental realm (e.g., Smit et al. 2017; Dawah et al. 2020), mid-Asia (e.g., Shah et al. 2014; Sengupta et al. 2018), and Southeast Asia (e.g., Bańkowska 2000). *Eristalinus taeniops* has been introduced to Florida (USA) and expanded rapidly through the Nearctic (i.e., California; Dowell et al. 2016) and the Neotropics. In this latter realm, the species occur in Argentina (Rossi Rotondi et al. 2020; Torretta et al. 2021a; Maza et al. 2023), Brazil (Morales and Köhler 2006), Chile (Thompson 1999; Barahona-Segovia et al. 2021; Olivares et al. 2021), Colombia (Ángel Villarreal et al. 2021), Paraguay (Goosen-Lebrón et al. 2023), and Bolivia, Costa Rica, Ecuador, México, Perú, and Uruguay (officially in this study). *Eristalinus taeniops* can be found from 2 m a.s.l. up to 3,800 m a.s.l. (Figure 2). Table 1 shows the EOOs and AOOs for all countries where *E. taeniops* is cited for the first time, as well as new records from Chile.

Subfamily Syrphinae Leach, 1815
Tribe Syrphini Latreille, 1802

Genus *Pseudoscaeva* Vockeroth, 1969

Pseudoscaeva Vockeroth 1969: 123 (genus description); Knab 1914: 151 (original description of type-species: *Syrphus diversifasciatus*); Mengual et al. 2012: 202 (as *Ocyptamus* (*Pseudoscaeva*)); Miranda et al. 2016: 171 (as *Ocyptamus diversifasciatus* species group); Mengual et al. 2018: 14 (*Pseudoscaeva* resurrection generic name).

***Pseudoscaeva meridionalis* (Fluke, 1951)**

Figure 3A–D

Stenosyrphus (*Episyrphus*) *diversifasciatus* var. *meridionalis* Fluke, 1951: 446

New records. ARGENTINA – JUJUY • Mesada de las Colmenas, Calilegua National Park; 23°42'10"S, 064°51'46"W; 1,076 m a.s.l.; 24.IX.2021; Hugo Hulsberg obs., photograph only; 1♀ – BUENOS AIRES • San Miguel; 34°32'25"S, 058°43'28"W; 26 m a.s.l.; 14.X.2021; Camila Ferreira obs., photograph only; 1♀ • Ciudad Universitaria de Buenos Aires, Belgrano; 34°32'24"S, 058°26'34"W; 4 m a.s.l.; 15.VIII.2023; Felipe Horton obs., photograph only; 1♀ • Parque Barrancas de Belgrano; 34°33'34"S, 058°27'00"W; 10 m a.s.l.; 22.VI.2024; buddfyede obs., photograph only; 1♂ • Lago de Regatas, Belgrano; 34°33'36"S,

Table 1. Extent of occurrence (EOO), area of occupancy (AOO), number of localities and subpopulations for the countries with new records in the Neotropics for *Eristalinus taeniops* (Wiedemann, 1818). n.a. = does not apply.

Country	EOO (km²)	AOO (km²)	Localities	Subpopulations
Mexico	1,516	84	10	5
Costa Rica	n.a.	2	1	1
Ecuador	66,745	372	37	16
Peru	288,168	192	28	17
Bolivia	24,486	48	7	4
Uruguay	107,253	96	12	8
Chile	195,242	508	40	66

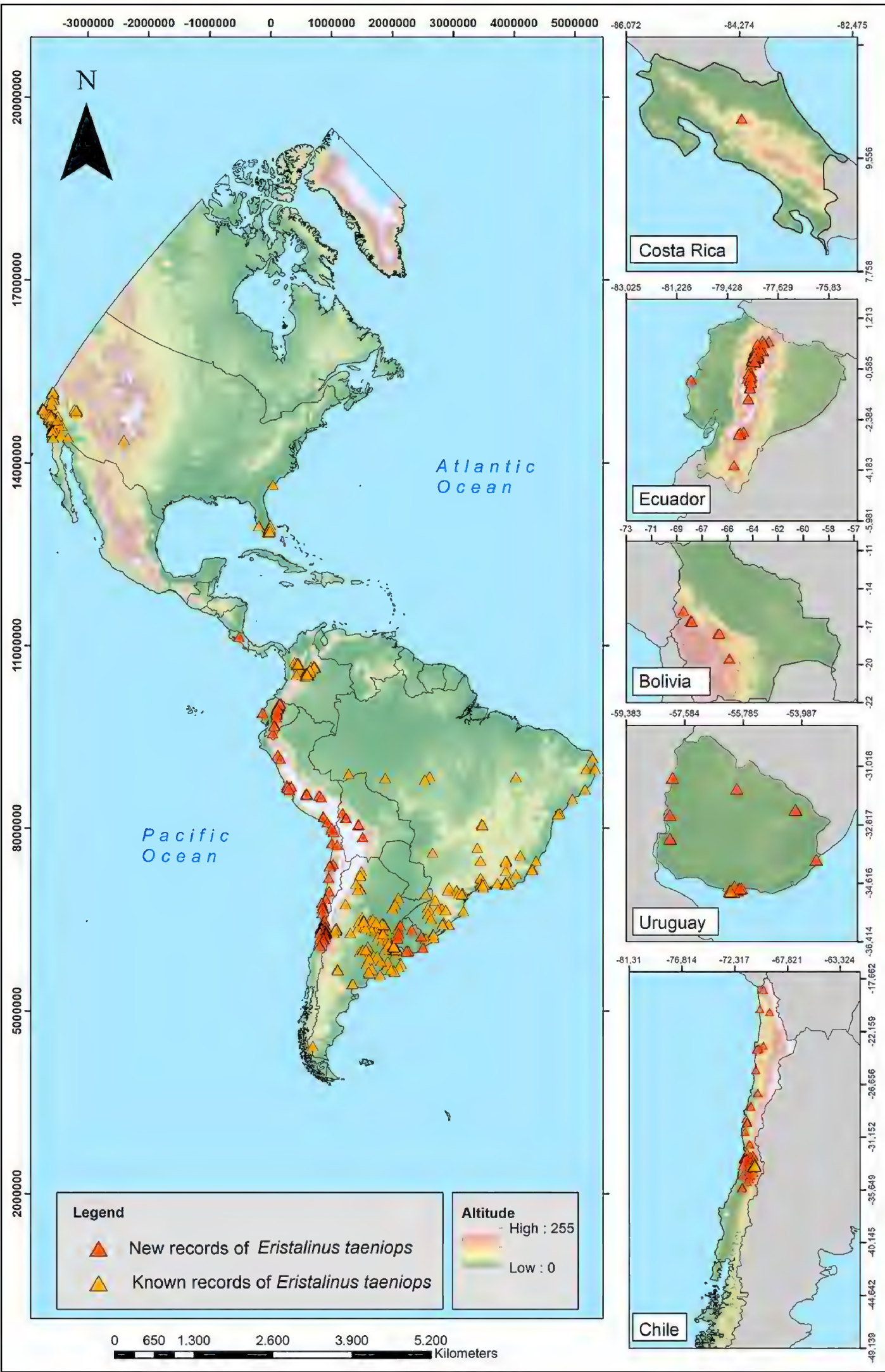


Figure 2. Distribution map of *Eristalinus taeniops* (Wiedemann, 1818) in the New World with emphasis on the new records by country.

058°25'50"W; 5 m a.s.l.; 06.X.2019; Ricardo A. Palonsky obs., photograph only; 1♀ • Parque El Rosedal, Palermo; 34°34'17"S, 058°25'02"W; 22 m a.s.l.; 22.VI.2019; Ricardo A. Palonsky obs., photograph only; 1♂ • Parque Los Niños, Crámer road; 34°34'31"S, 058°26'39"W; 34 m a.s.l.; 24.XI.2021; Leonel Roget obs., photograph only; 1♀ • Lago Burmeister, Zoo Palermo; 34°34'38"S, 058°24'56"W; 3 m a.s.l.; 07.X.2022; tandria obs., photograph only; 1♂ • Zoo Palermo; 34°34'39"S, 058°25'00"W; 3 m a.s.l.; 18.I.2024; Matías Igarzabal obs., photograph only; 1♂ • Zoo Palermo; 34°34'47"S, 058°25'02"W; 4 m a.s.l.; 29.XI.2021; Sebastián Fornés obs., photograph only; 1♂ • República de la India road; 34°34'47"S, 58°24'56"W; 4 m a.s.l.; 26.VII.2024; Sebastián Muñoz obs., photograph only; 1♂ • Zoo Palermo; 34°34'51"S, 058°25'13"W; 5 m a.s.l.; 03.IX.2022; Pablo Malchiodi obs., photograph only; 1♀ • Jardín Botánico Carlos Thays; 34°34'56"S, 058°25'08"W; 9 m a.s.l.; 31.VII.2022; Diego Rosa obs., photograph only; 1♀ • Jardín Botánico Carlos Thays; 34°34'56"S, 058°25'08"W; 9 m a.s.l.; 17.XI.2022; calandria4 obs., photograph only; 1♂ • Jardín Botánico Carlos Thays; 34°34'56"S, 058°25'08"W; 9 m a.s.l.; 26.VI.2021; Eduardo Nadal obs., photograph only; 1♀

• Jardín Botánico Carlos Thays; 34°34'56"S, 058°25'08"W; 9 m a.s.l.; 10.VIII.2019; Diego Kondratzky obs., photograph only; 1♂ • Jardín Botánico Carlos Thays; 34°34'56"S, 058°25'08"W; 9 m a.s.l.; 13.VIII.2022; Diego Kondratzky obs., photograph only; 1♂ • Jardín Botánico Carlos Thays; 34°34'56"S, 058°25'08"W; 9 m a.s.l.; 20.III.2022; Mariano Ordoñez obs., photograph only; 1♀ • Jardín Botánico Carlos Thays; 34°34'56"S, 058°25'08"W; 9 m a.s.l.; 08.V.2022; Diego Rosa obs., photograph only; 1♀ • Jardín Botánico Carlos Thays; 34°34'56"S, 058°25'08"W; 9 m a.s.l.; 12.II.2023; Leonel Roget obs., photograph only; 1♀ • Facultad de Derecho, Universidad de Buenos Aires; 34°35'00"S, 058°23'29"W; 5 m a.s.l.; 03.I.2023; Matthias Kreier obs., photograph only; 1♀ • Plaza Güemes, Palermo; 34°35'22"S, 058°24'58"W; 37 m a.s.l.; 20.VIII.2019; tandria obs., photograph only; 1♀ • Facultad de Ciencias Veterinarias, Universidad de Buenos Aires; 34°35'35"S, 058°28'40"W; 23 m a.s.l.; 09.X.2021; Pablo Bombín obs., photograph only; 1♀ • Facultad de Agronomía, Universidad de Buenos Aires; 34°35'35"S, 058°28'40"W; 23 m a.s.l.; 10.VIII.2022; Sabrina Rendón obs., photograph only; 1♀ • Facultad de Ciencias Veterinarias, Universidad de Buenos Aires; 34°35'35"S, 058°28'40"W; 23 m a.s.l.; 30.VII.2022; Pablo Bombín obs., photograph only; 1♂ • Murillo road; 34°36'05"S, 058°26'36"W; 30 m a.s.l.; 30.IV.2022; Ricardo A. Palonsky obs., photograph only; 1♀ • Parque Centenario; 34°36'23"S, 058°26'08"W; 18 m a.s.l.; 29.X.2022; Ricardo A. Palonsky obs., photograph only; 1♂ • Parque La Estación; 34°36'29"S, 058°24'44"W; 18 m a.s.l.; 05.XI.2022; Bahiano Ayala obs., photograph only; 1♀ • Saenz Peña road, Plaza Mariano Moreno; 34°36'34"S, 058°23'12"W; 18 m a.s.l.; 25.VIII.2019; Guillermo Spacij obs., photograph only; 1♀ • Reserva Ecológica Costanera Sur; 34°36'29"S, 058°21'28"W; 6 m a.s.l.; 15.X.2018; Matías Cabezas obs., photograph only; 1♀ • Reserva Ecológica Costanera Sur; 34°36'29"S, 058°21'28"W; 4 m a.s.l.; 19.VIII.2013; Ricardo A. Palonsky obs., photograph only; 1♀ • General Flores Venancio; 34°36'50"S, 058°25'50"W; 16 m a.s.l.; 24.X.2020; Pablo Viera obs., photograph only; 1♀ • Plaza Corralón de Floresta; 34°37'41"S, 058°29'18"W; 15 m a.s.l.; 04.VIII.2021; Eduardo Nadal obs., photograph only; 1♂ • Centro Murga Los Chiflados de Boedo; 34°38'09"S, 058°26'14"W; 17 m a.s.l.; 17.XI.2019; Ricardo A. Palonsky obs., photograph only; 1♀ • Parque de Los Patricios; 34°38'15"S, 058°24'26"W; 12 m a.s.l.; 17.XI.2019; Luis Piacentini obs., photograph only; 1♀ • Parque Avellaneda; 34°38'45"S, 058°28'53"W; 21 m a.s.l.; 13.VI.2021; Romi Galeota obs., photograph only; 1♀ • Parque Avellaneda; 34°38'45"S, 058°28'53"W; 21 m a.s.l.; 24.XI.2018; Eduardo Nadal obs., photograph only; 1♀ • Reserva Ecológica Lago Lugano; 34°40'47"S, 058°26'32"W; 7 m a.s.l.; 05.X.2021; Facundo Chieffo obs., photograph only; 1♀ • Museo de Ciencias Naturales de La Plata; 34°54'26"S, 057°55'47"W; 14 m a.s.l.; 25.VIII.2019; Martín Arregui obs., photograph only; 1♀ – URUGUAY – CANELONES • Dr. Luis Batlle Berres road, Las Piedras; 34°43'51"S, 056°13'39"W; 67 m a.s.l.; 13.VII.2022; Diego da Motta obs., photograph only; 1♂ – MONTEVIDEO • Jardín Botánico de Montevideo; 34°51'30"S, 056°11'59"W; 13 m a.s.l.; 25.VII.2023; Fiorella Revello obs., photograph only; 1♀ • Facultad de Ciencias, UDELAR; 34°52'57"S, 056°07'05"W; 33 m a.s.l.; 07.XII.2023; Elena Ferreira obs., photograph only; 1♀ – CHILE – TALCA • Pantanillos, Cauquenes; 35°27'46"S, 072°18'06"W; 212 m a.s.l.; 02.II.2016; Cristian Estades obs., photograph only; 1♂.

Other specimens. ARGENTINA – TUCUMÁN • Villa Padre Monti, Burrucayú; [26°30'42"S, 064°59'41"W]; 17.I–07.II.1948; 896 m.a.s.l.; Golbach leg.; holotype 1♂, allotype 1♀; IFML without vouchers • same data; paratypes 4♂, 10♀; IFML without vouchers • Villa Nougues; [26°51'06"S, 065°22'53"W]; I.1929; 1,401 m.a.s.l.; NN leg.; 1♂; IFML without vouchers • Balneario La Toma, Tafi Viejo; [26°43'28"S, 065°17'23"W]; X.1926; 812 m.a.s.l.; NN leg.; 2♀; IFML without vouchers • Lules; 26°56'00"S, 065°20'55"W; 25.IV–14.V.2014; 435 m.a.s.l.; Noelia Maza leg.; 1♂, 3♀; IFML without vouchers – CATAMARCA • Aconquija; [27°28'12"S, 066°00'42"W]; 10.XII.1950; 1,580 m.a.s.l.; Golbach leg.; 1♂; IFML without voucher.

Identification. Male. Holoptic, eyes reddish; vertex and ocellar triangle shiny black-bluish (Figure 3C); occiput with 2–3 rows of brownish piles and scarce pruinosity; ventral-posterior margins of the eyes with long whitish piles (see black arrows in Figure 3E). Frons orange-reddish and parafacials grey-bluish covered with a mix of black and whitish pile. Antennae brownish dorsally and reddish ventrally; a black area surrounds the lunule and scape (Figure 3C). Face with yellow-whitish pruinosity and longitudinal blackish vitta in medial line; tubercle prominent. Scutum homogeneously blackish with a bronzed reflection (Figure 3C). Notopleuron with whitish pilosity. Pleuron grey-reddish, covered with whitish pilosity. Katatergum blue-greyish with whitish piles similar to *Allograpta* Osten Sacken, 1875 (according to Miranda et al. 2020). Scutellum yellow with anterior and lateral margins sometimes greyish. Legs brown-reddish with grey-bluish parts, covered with whitish piles; particularly, femora with a row of 7–9 whitish and long ventral piles, with the longest piles closer to the coxa. Pterostigma blackish; wings almost bare, except presence of microtrichia on apical parts of the veins R_1 , R_{2+3} , and R_{4+5} . Vein R_{2+3} ending anteriorly to the wing apex; vein R_{4+5} petiolate; M_1 slightly petiolate. Alula half the length and width of the cup cell, almost bare. Halteres pale yellow with knob some darkish. First tergite grey-bluish with black maculae. Anterior and posterior margins of the tergites 2 to 5 with background black and shiny grey-bluish fasciae that do not reach the margins (Figure 3C). Lateral margins of the tergites and sternites are more brownish with some individuals showing shiny bluish tints on lateral margins. Tergite 2 with a black velvet fascia not touching the margins (Figure 3C). Tergites 3 and 4 with a black velvet fascia interrupted commonly by a continuous yellow fascia, positioned near the anterior margin. This fascia is broad at the margins and strongly attenuated in the middle (Figure 3C). Sometimes the yellow fasciae are interrupted by a medial black vitta, leaving two subtriangular maculae (Figure 3C). Anterior margin of the tergites 3 and 4 with a narrow black velvet fascia (Figure 3C). Tergite 5 with a black

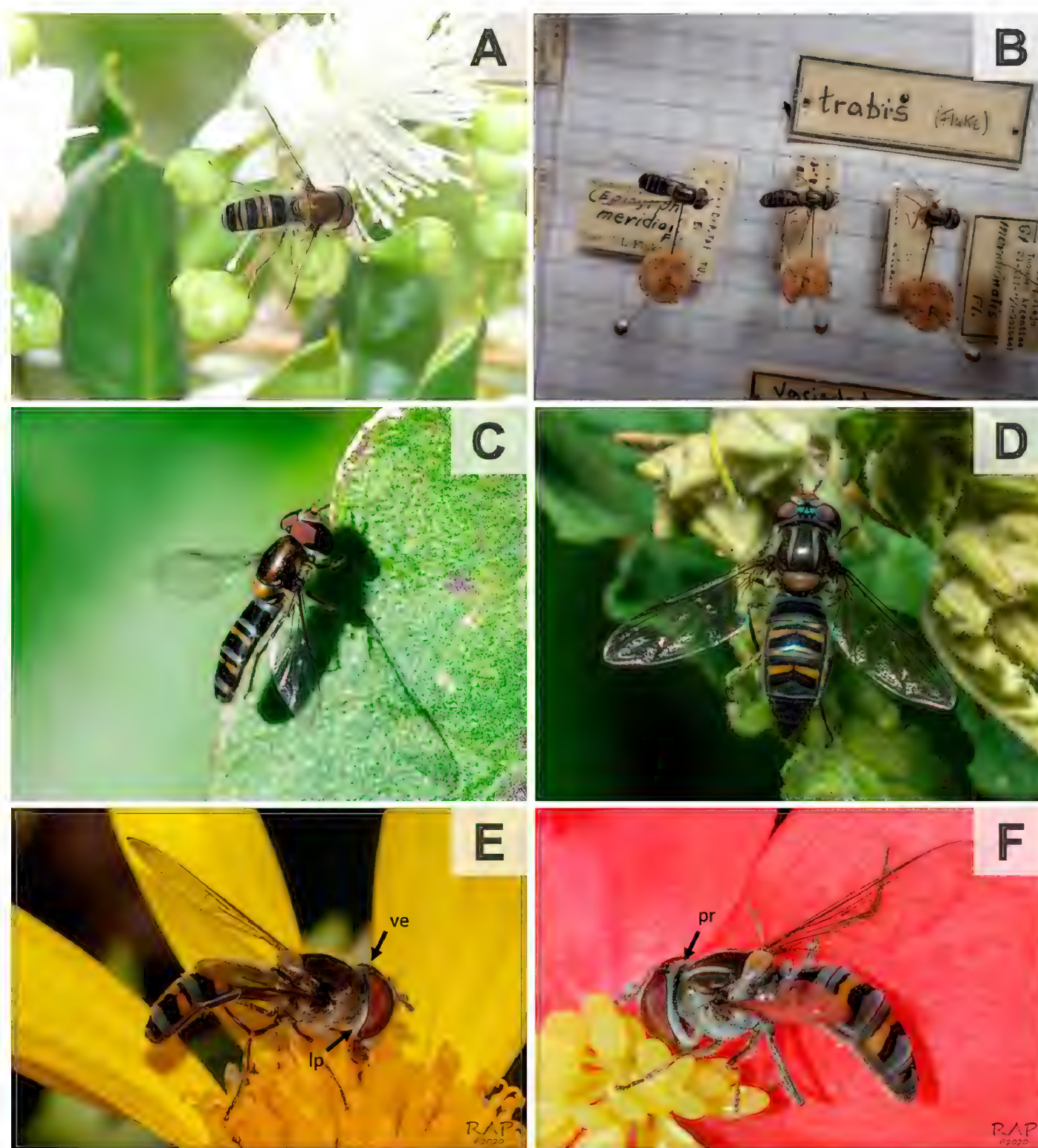


Figure 3. *Pseudoscaeva meridionalis* (Fluke, 1951). **A.** Male, dorsal view, visiting flowers of *Amomyrtus luma* (Molina) D. Legrand & Kausel, Pantanillos, Chile (photo by Cristian Estades). **B.** Female, dorsal view from the Museo de Ciencias Naturales of the Manuel Lillo Foundation (photo by Noelia Maza). **C.** Male, lateral view, Buenos Aires, Argentina (photo by Diego Kondratzky). **D.** Female, dorsal view, Buenos Aires, Argentina (Photo by Facundo Chieffo). **E.** Male, lateral view, Buenos Aires, Argentina (photo by Ricardo A. Palonsky); black arrows indicate to ve = vertex and lp = long whitish piles. **F.** Female, lateral view, Buenos Aires, Argentina (photo by Ricardo A. Palonsky); black arrow indicates to pr = pruinosity.

fascia in the middle and reaching the margins. Tergite 6 with a small black spot in the middle and grey-bluish color. Tergites 7 and 8 grey-bluish. Sternites with a continuous white medial band.

Female. Similar to male except: vertex and ocellar triangle shiny blue with a bluish vitta descending to reach the reddish part of the frons. Ocellar triangle separated 1.5x from the superior eye margins. Occiput with 2–3 rows of brownish piles and pruinosity of the same color widely distributed around the posterior margins of the eyes (see black arrow Figure 3F). The scutum is somewhat darker in dorsal view, with two striking grey-bluish vittae, which not reaching the scutellum (Figures 3D, F). With two visible triangular yellow maculae on tergite 2, positioned at the upper-lateral margins into the black velvet fascia (Figures 3B, D). Similarly, in tergite 5, two small yellow maculae into the black fascia and positioned at the margins (Figures 3D, F).

Biological notes and remarks for Chilean record. The Chilean record of this species was photographed visiting flowers of *Amomyrtus luma* (Molina) D. Legrand & Kausel. Habitat for this species might be at risk since localities were destroyed in the 2017 forest fires in central Chile.

Distribution. Present in Argentina, Chile, and Uruguay. For Argentina and Uruguay, the EOO was 30,249 km² and 49 km², respectively. The AOO for Argentina and Uruguay was 84 km² and 12 km², respectively. Localities and subpopulations for Argentina were 7 and 4, respectively, and for Uruguay were 3 and 2, respectively. From Chile, it only been recorded from the Maule Region and their current AOO is 4 km² with a single locality and subpopulation. The altitudinal distribution is from sea level to 1,401 m a.s.l. (Figure 4).

Tribe Toxomerini Enderlein, 1938

Genus *Toxomerus* Macquart, 1855

Toxomerus Macquart 1855: 112 (original description); Hull 1941: 45–49 (key); Thompson 1981: 66 (description and keys); Thompson 1999: 326 (key); Metz and Thompson 2001: 225–256 (review of larger species);

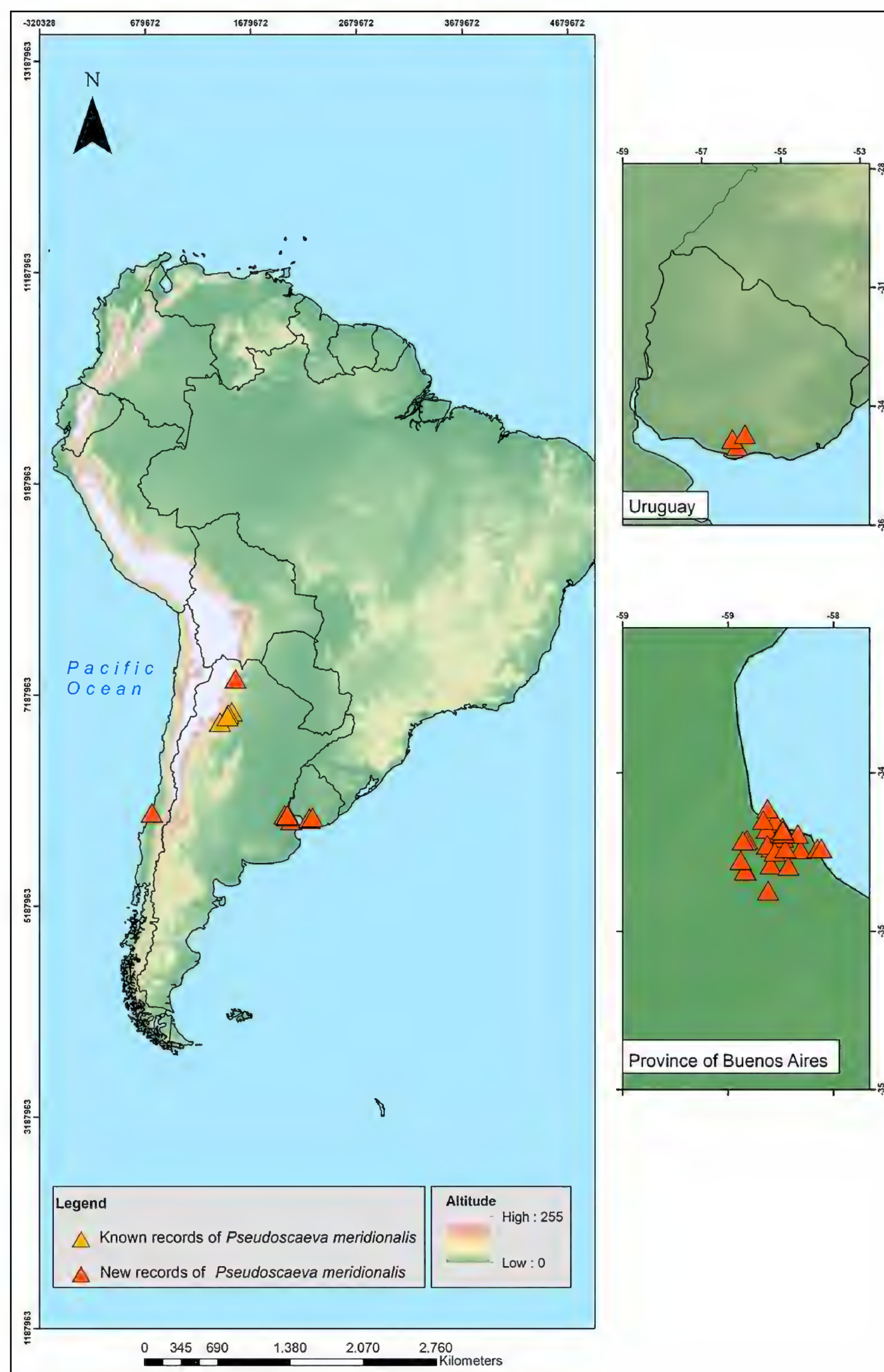


Figure 4. Distribution map of *Pseudoscaeva meridionalis* (Fluke, 1950) in the Neotropical region with emphasis on the new records by country.

Thompson and Thompson 2006: 317–331 (review of Chilean species); Marinoni et al. 2007: 149, 150 (description, key, and illustrations); Borges and Couri 2009: 1–72 (review of Brazilian species); Reemer 2010: 190–194 (review of Surinam species); Mengual 2011: 1–26 (review of the darker species).

***Toxomerus politus* (Say, 1823)**

Figure 5A, B

New records. CHILE – SAN FELIPE DE ACONCAGUA • El Manzano, between Alicahue and Putaendo; 32°28'47"S, 070°46'09"W; 978 m a.s.l.; 23.III.2022; Patrick Vyvyan obs.; photograph only; 1♀ – COLCHAGUA • Chepica; 34°44'00"S, 071°17'00"W; 202 m a.s.l.; 26.II.2022; Patricio Lorca obs., photograph only; 1♀ – TALCA • Cerrillo Caivan, Talca; 35°29'16"S; 071°39'51"W; 128 m a.s.l.; 01.III.2022; Ani Mari obs., photograph only; 1♀ – LINARES • Los Robles, Retiro; 36°04'55"S, 071°45'52"W; 168 m a.s.l.; 28.II.2024; Coke Nativo



Figure 5. *Toxomerus politus* (Say, 1823) **A.** Female, dorso-lateral view, El Manzano, Chile (photo by Patrick Vyvyan). **B.** Female, dorsal view, Linares, Chile (photo by Jorge Guajardo Nuñez).

obs., photograph only; 1♀ – LLANQUIHUE • Caicáen, Calbuco; 41°48'15.91"S, 073°09'24.49"W; 02.III.2022; 43 m a.s.l.; Fernando Pizarro obs., photograph only; 1♂.

Other specimens examined. ARICA • Lluta Valley, km 41; 18°24'06"S, 069°58'57"W; 21.4.1968; J. Acuña Leg.; 1♀, UTA syr401.

Identification. Face yellowish, at least 1/3 longer than eye width. Antennae orange-yellowish. In males, ocellar triangle something darker and shiny than in females. In females, vertical triangle shiny bluish; ocellar triangle dull yellow with vertex of the same color and protruded. In females, paravertica whitish pollinose. Scutum dull with lateral margins (i.e., postpronotal lobe, notopleuron, and alar callus) yellow (Figure 5A, B). A bluish-grey vitta (variable in width) with the same color's microtrichosity runs from the scutum's anterior margin to the scutellum's anterior margin (Figure 5A, B). On the sides of this vitta, the scutum has a golden-brown microtrichosity, and it extends to before the lateral parts of the scutum, where vittae of bluish-grey microtrichosity replace it. Scutellum dull orange with yellowish margins (Figure 5A, B). Femora and

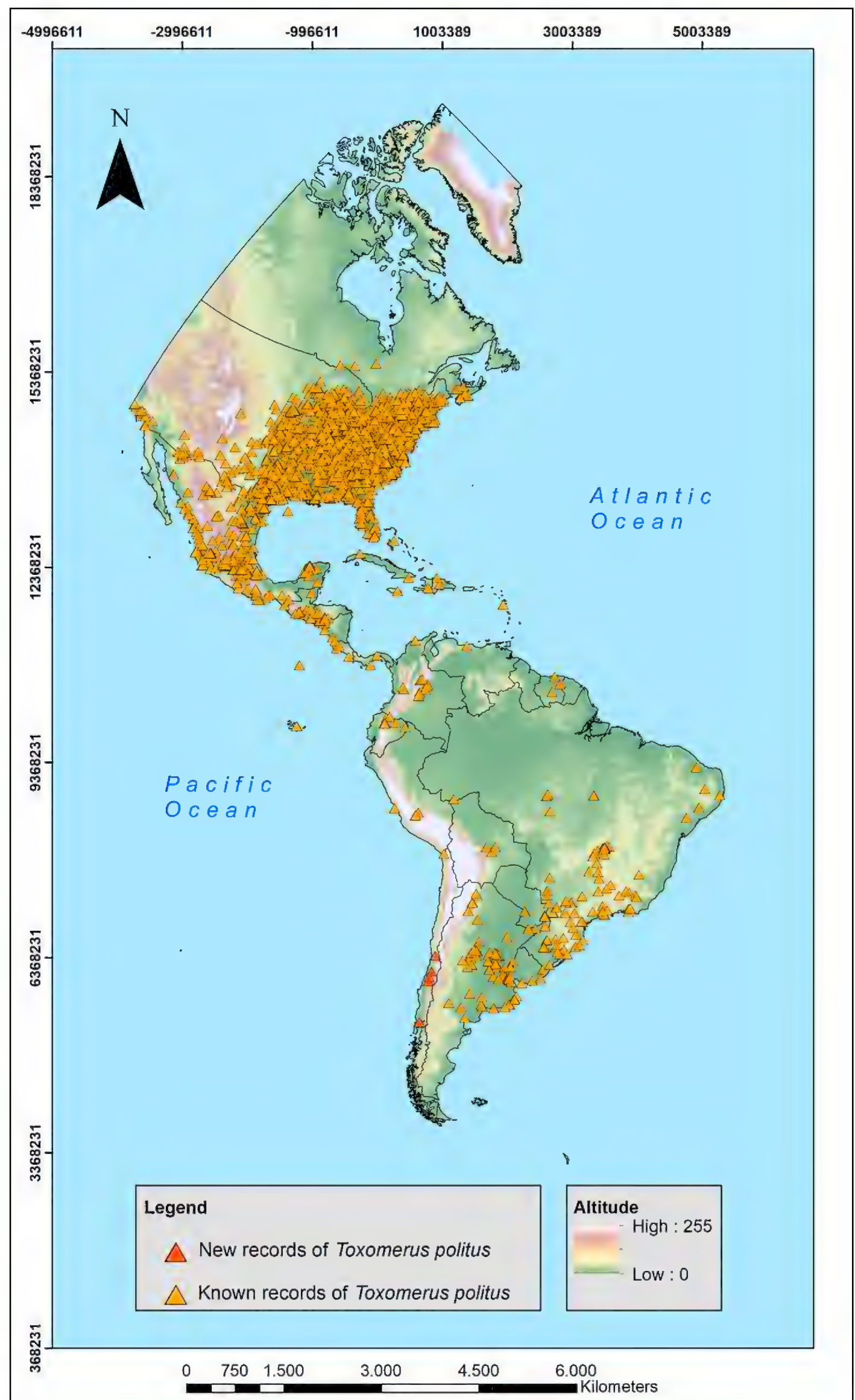


Figure 6. Distribution map of *Toxomerus politus* (Say, 1823) in the Neotropical region with emphasis on the new record in Chile.

tibiae yellow. Hind basitarsus brownish with last tarsus dull brownish to blackish (Figure 5A). Pterostigma yellow. Vein R_{2+3} petiolate touching the vein C at the level of the junction of M_1 and M_2 . Vein M_1 strongly petiolate with $R_{4+5} + M_1$ straight and touching the apex of the wing. Halteres yellow (Figure 5A). Abdomen with tergum I yellow on anterior margin yellow and with a black-bluish fascia in the posterior margin trespassing to the tergum II and not touching the abdomen margin (Figure 5A, B). Tergum II yellow with the posterior margin bicolored black-bluish fascia, especially shiny in the blue-grayish portion. Terga III and IV yellow on basal $\frac{2}{3}$, with narrow black subanterior fascia connected to medial vitta to form L-shaped, not touching or barely near to the lateral margin. Tergum V yellow with a narrow black subanterior fascia, not touching the margins and with a “V” shape in the middle (Figure 5A, B). Posterior and lateral margins of the tergum V blackish.

Biological notes and remarks for Chilean records. New records are located to more than 2,000 km approximately from the first record reported for this species. Biological notes have not still recorded in Chile but this syrphid has been photographed mainly in valleys with crops. Other authors in different Neotropical countries have recorded the phytophagous habit of the larvae feeding pollen of *Zea mays* L. (Marin 1969; Reemer and Rotheray 2009; Nunes-Silva et al. 2010).

Distribution. Widely spread in the New World: southern and eastern Canada, USA, and Mexico (Skevington et al. 2019); the Caribbean, including the Bahamas, Cuba, Dominica, Haiti, Dominican Republic, Jamaica, Lesser Antilles, Trinidad and Tobago, and Puerto Rico (Thompson 1981; Metz and Thompson 2001; Borges and Couri 2009); Mesoamerica including Costa Rica, El Salvador, Guatemala, Honduras, and Panamá (Metz and Thompson 2001; Borges and Couri 2009); South America including Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Surinam, Uruguay, and Venezuela (Marin 1969; Metz and Thompson 2001; Reemer 2010; Montoya 2016; Borges and Couri 2009; Barahona-Segovia et al. 2021; Maza et al. 2023). In Chile, this species has been recorded in Arica and Parinacota Region (Barahona-Segovia et al. 2021) and from the Valparaíso to Los Lagos Region (this study; Figure 6). The current EOO and AOO were 113,542 and 24 km², respectively. The numbers of localities and subpopulations was six each.

DISCUSSION

This work describes the first records of *Pseudoscaeva meridionalis* for Chile and Uruguay and officially expands the distribution of *Eristalinus taeniops* for Bolivia, Costa Rica, Ecuador, Mexico, Peru, and Uruguay. Furthermore, *Toxomerus politus* expanded its distribution at high latitudes in southern Chile, becoming the most austral record in the Neotropics.

Exotic fly species reported here could become invasive or maybe already are, in such a way, the negative impacts of their presence could affect the ecosystem services provided by the native flower fly species. For example, the male drone fly *E. tenax* exhibits aggressive territorial behavior, defending patches of flowers occupied as mating sites (Wellington and Fitzpatrick 1981). This behavior has been recently noted in Chile by Barahona-Segovia et al. (2021), where *E. tenax* attacks native bumblebees such as *Bombus dahlbomii* Guérin-Méneville, 1835, small bees, and other flies to defend *Alstroemeria* L. flower patches, avoiding the natural pollination process of the native plants. Furthermore, adults of all species reported here could compete with native flower fly species for nectar and pollen, especially from native plants such as has been observed for *E. tenax*. Although no negative impacts have not been reported for any of these species, further studies to evaluate competitive interactions are needed, particularly for species with more expanded ranges such as *E. taeniops*, especially in arid ecosystems, where the flower resources are scarce because of environmental conditions and the impacts could be more intense for native flower-fly species.

The geographic range of *P. meridionalis* for Chile was extended 1,069 km southwest in a straight line from the nearest record in Aconquija in Catamarca (Argentina), while for Uruguay was expanded 881 km in a straight line from the nearest record in Tafi Viejo, Tucúman (Argentina). On the other hand, for Argentina, *P. meridionalis* is recorded in the provinces of Jujuy (280 km in straight line) and Buenos Aires (1,062 km in straight line) for the first time. The absence of previous records in Chilean museums, collections, and our citizen-science program supports the decision to consider it an exotic flower-fly species as other examples recently recorded, such as *Trichopoda (Galactomyia) pictipennis* Bigot, 1876 and *Stevenia deceptor* (Loew, 1847) recently recorded in central Chile (Barahona-Segovia et al. 2023, 2024). However, the presence of *P. meridionalis* must be confirmed with new prospections because the nearby areas were burned in the 2017 forest fires in central Chile. With the high dispersal rate of syrphids, remaining individuals could still be present in surrounding habitats untouched by fires.

Eristalinus taeniops was reported for the first time in the New World (i.e., USA) by Thompson et al. (1990). From here, the invasion process of *E. taeniops* throughout Meso and South America is unknown, although probably other invasion events drove their spread in the New World. The distribution of *E. taeniops* in the different Neotropical countries seems to be clustered and closely related to urban areas with flowers (mainly exotic) such as parks, squares, and gardens, although it has also been possible to record it in crops. This pattern is classic in citizen-science data since records are usually seen more in areas accessible to people (Geldmann et al. 2016). Therefore, the probability of finding this species in new areas and at different altitudes, particularly natural ones, is high. Also, it is possible to hypothesize a rapid dispersal of *E. taeniops* throughout the Americas, particularly the Caribbean, Mesoamerica, and northeastern South America due to the climatic affinity of this drone fly by warm temperatures from where this species originated and their generalist behavior of visiting different floral resource types. Under various global warming scenarios, *E. taeniops* could invade higher latitudes such as *Drosophila suzukii* (Matsumura, 1931) (dos Santos et al. 2017), which are currently inaccessible due to probably physiological restrictions, but further analyses are required to understand the potential colonization capability of this species toward Canada or southern South America.

First records of *E. taeniops* in Chile were mentioned by Thompson (1999), but without details of the localities. Based on previous records provided by Barahona-Segovia et al. (2021), the species extended

1,608 km northeast from Quilpué (Valparaíso Region) to Pampa Algodonal in Arica and Parinacota Region, currently occupying all administrative regions between the abovementioned points. Furthermore, *E. taeniops* extended 232 km to the southwest from Puente Alto in the Metropolitan Region to Cerrillo Caivan in the Maule Region, this record being the southernmost observed to date in Chile. Barahona-Segovia et al. (2021) reported that *E. taeniops* only was present in two administrative regions in central Chile; however, they also state a wider distribution of the band-eyed drone fly than the known one based on opportunistic records used by our citizen-science program. Here, we reported the continuous distribution of 1,923 km in a straight line across nine administrative regions in Chile based on that previous statement and individual collections made by the corresponding author.

For *T. politus*, the new records found with our citizen-science program increased their latitudinal expansion in Chile by 1,561 km south from the first record known in the Arica and Parinacota Region to central Chile, specifically to El Manzano, in the Petorca Province, Valparaíso Region. Like *P. meridionalis*, no previous records of central Chile were obtained from national collections, except the first record in the UTA collection from northern part of Chile (Barahona-Segovia et al. 2021). With the extensive network of people from our citizen-science project collaborating in taking fly records across the country, it seems unlikely that the species moved across the Atacama Desert without being previously recorded. These facts support the idea that larvae or pupae have been accidentally introduced at one point or several throughout central Chile. A hypothesis for these new records could be the importation of corn from other countries because the larva of this flower fly species has been reported as a phytophagous habit as other Toxomerini such as *Toxomerus apeiensis* (Harbach, 1974) and *T. pulchellus* (Macquart, 1846) (Marin 1969; Reemer and Rotheray 2009; Nunes-Silva et al. 2010; Dumbardon-Martial 2016). Through molecular techniques, it is possible to know the origin (i.e., country or city) of these new populations as proposed by Jordaens et al. (2015), and thus intensively control products of plant origin from these countries to avoid future introductions.

Finally, citizen science through opportunistic records on social media represents a great opportunity to fill distributional gaps of exotic species and follow their spatiotemporal changes and inform new introductions (Johnson et al. 2020). In the case of flies, some examples of invasive species from different families such as the psychodid *Clogmia albipunctata* (Williston, 1893) in Nordic countries (Kvifte 2023); the blowflies *Chrysomya albiceps* (Wiedemann, 1819) and *C. megacephala* (Fabricius, 1794) in Chile and Mexico, respectively (Barahona-Segovia and Barceló 2021; Jaume-Schinkel and Mengual 2022); the mosquito *Aedes japonicus* (Theobald, 1901) in Spain (Eritja et al. 2019), or syrphids like *E. taeniops* in Argentina and Paraguay (Rossi Rotondi et al. 2020; Goosen-Lebrón et al. 2023; Maza et al. 2023) have demonstrated the magnitude of online platforms and social media to report new introductions or understand the ecology of these pest species at a global scale.

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ADDITIONAL INFORMATION

Conflict of interest

The authors declare that no competing interests exist.

Ethical statement

No ethical statement is reported.

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Author Contributions

Conceptualization: RMB-S. Data curation: RMB-S, JC, LP-M. Formal analysis: RMB-S. Funding acquisition: RMB-S. Investigation: RMB-S, JC. Methodology: RMB-S, JC, LP-M. Project administration: RMB-S. Resources: RMB-S. Validation: RMB-S, JC, LP-M. Visualization: JC, LP-M. Writing – original draft: RMB-S. Writing – review and editing: RMB-S, JC, LP-M.

Author ORCID iDsRodrigo M. Barahona-Segovia  <https://orcid.org/0000-0002-1509-2935>Javiera Chinga  <https://orcid.org/0000-0001-6046-4964>Laura Pañinao-Monsálvez  <https://orcid.org/0000-0002-0309-0051>**Data availability**

Data that support the findings of this study are available in the main text or Supplementary Materials, available as separate downloads from Figshare and the journal's website.

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SUPPLEMENTARY MATERIALS

Table S1. Records of *Pseudoscaeva meridionalis*, *Toxomerus politus*, and *Eristalinus taeniops*. The dataset contains columns with species names, localities, dates, geographical coordinates, legacy, and a link to verify each record with your original photo and information. Very few records have not presented a link, but records remain verified for the corresponding author. The dataset is available in Figshare with the DOI <https://doi.org/10.6084/m9.figshare.26130823> and available at <https://figshare.com/s/54f302a8ebc3b3437a57>.

Table S2. Records of interactions between plant species and *Eristalinus taeniops* or *Pseudoscaeva meridionalis* only for Chile. The dataset contains columns with locality for each syrphid record, administrative region for each record between syrphids and plants, plant observations, plant taxa, plant family and origin for each plant species. The dataset is available in Figshare with the DOI <https://doi.org/10.6084/m9.figshare.26130823> and available at <https://figshare.com/s/54f302a8ebc3b3437a57>.

Both tables are also available as supplementary files on the Check List website.